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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Problems in Colour Chemistry

A RATHER unusual circumstance occurred at the ninth annual dinner of the Oil and Colour Chemists' Association on Wednesday, for two of the speeches made by the guests came from two generations of a famous chemical family—namely, Professor H. E. Armstrong and his son, Dr. E. F. Armstrong. The latter, proposing the toast of "The President of the Association," very truly said that he was "Klein" only in name; scientifically and industrially he was not "klein" but very big. He expressed the opinion that one of the great problems confronting oil and colour chemists was the question of the constitution of linseed oil; the ability of this substance to carry pigments was discovered 500 years ago, and yet, as Dr. Armstrong pointed out, we did not yet know what it was. He expressed a hope that the university workers would get back to the problems of organic chemistry—back to what, he said, his father would call honest work in the laboratory. Incidentally, he dropped a hint of a new development in the activities of the Department of Scientific and Industrial Research, for he indicated that it was looking into industry for problems, too remote at the moment from industrial activity, for investigation in the universities, mentioning that the aid of Mr. W. J. U. Woolcock had been asked on the chemical side. Dr. Armstrong was of opinion that a great future lay before the colours given by the synthetic organic chemical industry to the oil and colour manufacturers.

There was a certain note of sadness about the speech made by Sir Frank Heath, for he said that, in view of his approaching retirement from office, this was the last occasion on which he would rise to speak for the Department of Scientific and Industrial Research. He reviewed the growth of the industrial research associations since the inception of the Department, showing how—at first the objects of some suspicion by some leaders of industry—they now received enthusiastic support from all sides. Of scientific work in general, he said that its only possible value was its value to humanity. Incidentally, he emphasised the fact that new discoveries lead to new difficulties, for the spray method of applying new synthetic varnishes, etc., was leading in some instances to diseases in the workers. This was a matter requiring investigation. He pointed out that this and other things showed how the work of the research association of the paint industry might have to be extended, not only to physics, but possibly also to biology and hygiene. Professor Armstrong, in his speech, expressed the view that, in spite of all that had been said and done, white lead and linseed oil still retained their importance.

The U.S.A. Flexible Tariff

IN the United States Tariff Act of 1922 was included what is known as a flexible tariff provision, under which, within certain limits, the President was empowered to vary the tariff as might be thought necessary in order to neutralise the competition of foreign imports. The question of the legality of this flexible arrangement, which delegates to the President the powers of Congress, has (*Chemical and Metallurgical Engineering* states) been before the United States courts almost continuously since the passing of the Act, and it is only within the past fortnight that the slow processes of the law have made their progress apparent. A decision delivered on February 24 by Presiding Judge Graham of the United States Court of Customs Appeals not only declared that Section 315 is constitutional and therefore a proper exercise of the power of Congress, but also found a valid basis for those provisions of the law that have as their aim the protection of American industry.

The fact that the case in question involved the collection of an increased duty on imports of barium dioxide is of incidental significance, especially because the majority of the applications under Section 315 have referred to chemical commodities. In this instance, a New York importer had protested against payment of a duty of six cents per lb. on barium dioxide, which was imposed after the Presidential

proclamation of May 19, 1924, had increased the rate from four cents per lb. The importer's complaint was found unjustified by the United States Customs Court, but this decision was appealed against on the score (1) that Section 315 of the Tariff Act of 1922 is unconstitutional because it delegates to the President the Congressional powers of taxation and legislation, and (2) that Congress under the powers given it by the Constitution can not legislate solely for the protection of domestic industry. Answering these propositions, the higher Court laid down a general rule that Congress had the absolute legislative right to regulate foreign commerce in any way it saw fit—to levy discriminating duties or even to prohibit importation. "It was for Congress to select the means," the Court held, "by which it thought the best interests of the country would be served in encouraging, fostering, and protecting the commerce and industry of the country. Having done so, within constitutional limits, the Court will not interfere."

This broad pronouncement (our New York contemporary remarks) marks an important victory for American industry, the more significant because it comes from a tribunal before which the domestic manufacturer had no legal status prior to the Act of 1922. The decision will doubtless be taken on appeal to the Supreme Court, but a case carefully built on such sound business principles is not likely to be easily broken down in this final process of adjudication.

Petroleum Oil Recovery

THE rapidly growing demand for petrol continues to direct attention to the motor fuel situation, and to set people thinking what is likely to happen in the next few years. New oilfields continue to be found, and unless these discoveries cease with unexpected suddenness, the falling off in crude oil production cannot be anything but gradual. But this decline will not improbably be accompanied by the development of other products, such as fuel oils from the hydrogenation of coal, methanol, ethanol, alcohol-ether mixtures, etc., the production of which may conceivably advance to such an extent that little, if indeed any, hardship will occur during the transition period.

When existing methods of flowing and pumping have extracted all the oil that can be obtained, with reasonable economy, it must be remembered that in a large number of oilfields the greater part of the oil will remain in the sands. It is broadly computed that only 14 per cent. of the total quantity of oil available is removed by present methods. A further 28 per cent. can be recovered by improved methods of rejuvenation and extraction, which will yield twice as much oil as the quantity extracted from fields which, up to recent times, were regarded as exhausted. To what extent methods yet to be evolved will ensure the recovery of the remaining 58 per cent. it is impossible to say. But with our rapidly advancing knowledge, the development of some such methods cannot be excluded from view. It is known that several influential companies have been concentrating attention on this question for some time, that it has been the subject of consideration by the U.S.A. Bureau of Mines and Department of Geological Survey, and that important progress has been made in obtaining an improved yield by the restoration of gas pressure and other devices. That the future will witness further progress appears not unlikely.

The Chemistry of Petrol Problems

IT was Dr. Ormandy who recently pointed out, in the discussion on the Cross cracking process and plant, that to this country is due much of the credit for the researches undertaken into petrol problems, as applied to petrol engines. The Royal Aircraft Establishment, the Admiralty Laboratory, the Air Ministry Laboratory, and the various universities have contributed very substantially to our knowledge of the subject. From a recent paper, read by Mr. H. R. Ricardo to the Institution of Automobile Engineers, it is possible to form some idea of the character of the problems which have been investigated.

So long as one keeps clear of detonation, as Mr. Ricardo pointed out, the higher the compression the cooler the engine will run, for the obvious reason that for the same power less total potential heat is required. Further, a greater portion of such energy will simultaneously be turned to useful work. Mr. Ricardo's view was that, in order to suppress detonation, (*a*) the expedient of using metallic dopes, such as lead ethide or iron carbonyl, may be ruled out; (*b*) it is now a common practice for all oil companies to blend their fuels for the European market with fuel oils of high ignition point, such as benzol, or alcohol, in order to maintain a fairly high proportion of aromatics and naphthenes; and (*c*) the widest scope of all, owing to our increasing knowledge of the process of combustion, lies in the design of the combustion chamber. The experiments described to determine the pressure rise and its phase relation, on a single cylinder engine, showing nearly thirty different heads, all with a compression ratio of 5 : 1, are no less interesting to chemists than to automobile engineers. Indeed, the paper reveals in a striking way the inter-relation of the chemist and the automobile engineer, and from that point alone is worth attention.

Sulphuric Acid in Agriculture

THE *International Review of the Science and Practice of Agriculture*, published by the International Institute of Agriculture in Rome, illustrates the enormous advances which the scientific study of agriculture has made in recent years, and the development of research in this field on an international basis. The third number of Volume IV, which has just reached us, includes two original articles—one by H. Henseler, on "The standardisation of wool in the preparation of international wool statistics," and the other by E. Rabaté, on "The use of sulphuric acid against weeds and certain crop parasites." The original trials in 1898 in the spraying of fields of cereals with solutions of dilute sulphuric acid were not particularly favourable, but the results of more recent experiments, based on much fuller knowledge, are described as "very satisfactory." Growers in the Paris district now use several thousands of trucks of acid, and quite twenty firms are engaged in the manufacture of spraying machines. In the killing of weeds, it is claimed, sulphuric acid, in dilutions of

5 to 15 per cent. in volume, is much more active than sulphate of iron, sulphate of copper, sylvinite, or sea salt. Applied to soils, it attacks mineral or organic matter energetically; its effect is decalcifying in about the same degree as ammonium sulphate, and it decomposes a weight of lime approximately equal to its own weight. Its action on weeds is not actually poisonous but dehydrating, and is therefore more marked in the case of tender plants. Its slightly scorching effect on cereals is said to be only temporary, and the plant soon recovers, while it is found to be distinctly effective against footrot in wheat. The illustrations accompanying the article certainly appear to support the conclusions. The uses of sulphuric acid in agriculture and the best methods of its application are still under investigation, but in France its use is decidedly on the increase, not only as a weed and parasite destroyer, but actually as a fertiliser. It has been found that a stronger weed-killing action and a more marked fertilising action is promoted by the addition of ammonium sulphate to the sulphuric acid solution. Nitrate of soda acts similarly. Further research into these matters is strongly urged.

In addition to these articles, there is information of great value and interest in the proceedings of the International Society of Soil Science and of the International Commission for the Study of Chemical Fertilisers. In the former, there are papers on "The effect of lime and fertilisers on the potash content of soil and crop," on "The permeability of clay soils," on "The determination of soil fertility," and on other subjects; in the latter, the record of the development of international action can hardly be ignored by any serious student of the subject.

A Second Pittsburgh Conference

WE understand that a second international conference on "Bituminous Coal" is to be held at the Carnegie Institute of Technology, Pittsburgh, in November of 1928, according to an announcement by Dr. Thomas S. Baker, president of the institution. "We are so greatly encouraged by the success of the first International Conference on Bituminous Coal, held at the Carnegie Institute of Technology last year," he states, "that we have definitely decided to hold a second and similar international congress two years from now." The first conference was called by President Baker for the purpose of finding new uses for bituminous coal, and especially to discuss the problem of liquefying coal to supplement the petroleum oil supply of the world. More than 1,700 delegates, including representatives of thirteen different countries, attended. The speakers included Dr. Friedrich Bergius and Professor Franz Fischer (Germany), General Georges Patart and Jean Bing (France), Dr. C. H. Lander, Mr. Geoffrey M. Gill, Mr. Harold Nielsen, and Dr. R. Lessing (England), and several other well-known scientists, in addition to a long list of prominent American engineers and men of affairs and science. President Baker states that the second conference will be designed to "uncover" (in the American term) whatever new information is made available during the coming two years regarding various problems in the use of soft coal.

An American Institute

THE American Chemical Society have decided to support the formation of an American Institute of Chemistry, and it will be quite a different institution from the Institute of Chemistry of Great Britain and Ireland. It will, in fact, hardly be an institution at all in our sense of the word. The intention is to bring together every summer, at a centre of technical education, chemists from the nation's laboratories of industry and education, and to hold a general conference of chemists. The Chemical Foundation, Inc., and the Pennsylvania State College have agreed to furnish the funds to put the plan in operation for the first session, which is to be held during next July at Pennsylvania State College. The North-western University has requested the privilege of being the second university to co-operate with the Society and the session of 1928 is to be held at Evanston. Places for the third and subsequent sessions remain to be chosen. The purpose of the Institute of Chemistry is to offer a series of lectures and demonstrations whereby those in attendance may be brought quickly up to date in fields both within and outside their own special fields of study, and to afford facilities for teachers to acquire the latest information in chemical science as well as to benefit from contact with the industrial and consulting professional chemists.

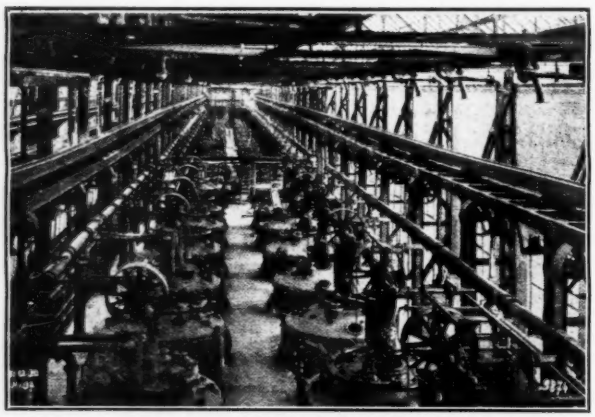
The Calendar

Apl.		
4	Society of Chemical Industry (London Section). 8 p.m.	Burlington House, Piccadilly, London.
4	Institution of the Rubber Industry (London Section): "Rubber Statistics." H. Eric Miller.	Engineers' Club, Coventry Street, London.
4–9	Artificial Silk Goods Exhibition. Daily 10-7.	Holland Park Hall, London.
5	Royal Institution: "Some Properties of Coke."—II. John W. Cobb. 5.15 p.m.	21, Albemarle Street, London.
5	Hull Chemical and Engineering Society: Annual Meeting. 7.45 p.m.	Grey Street, Park Street, Hull.
5	Society of Chemical Industry (Birmingham Section): "Ultra-Violet Light." A. A. King. 7.15 p.m.	University, Edmund Street, Birmingham.
6	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.
7	Optical Society. 7.30 p.m.	Imperial College of Science and Technology, London.
7	Oil and Colour Chemists' Association: "The Yellowing of Linseed Oil." R. S. Morrell and S. Marks. 8 p.m.	8, St. Martin's Place, Trafalgar Square, London.
7	Chemical Society. 8 p.m.	Burlington House, Piccadilly, London.
8	Society of Dyers and Colourists (Manchester Section): Papers by A. J. Hall, R. A. Hill, L. G. Lawrie, R. V. Taylor, G. M. Williams, and Miss Hibbert. 7 p.m.	36, George Street, Manchester.
8	Institute of Metals (Sheffield Section): "Electric Furnaces." V. O. Cutts. 7.30 p.m.	University, St. George's Square, Sheffield.
8	Oil and Colour Chemists' Association (Manchester Section): Annual General Meeting.	Manchester.
9	Royal Institution: "The Alpha Rays and their Application to Atomic Structure"—IV. Sir Ernest Rutherford. 3 p.m.	21, Albemarle Street, London.
11	Ceramic Society: Annual Meeting. 7.30 p.m.	North Staffordshire Technical College, Stoke-on-Trent.

Synthetic Ammonia Production in Germany

Notes on the Oppau and Merseburg Plants

THE manufacture of synthetic ammonia in Germany is not only a matter of scientific and technical interest, but is one of great economic importance to the country. The rapid development of the synthetic ammonia industry in Germany has made that country quite independent of imported Chilean sodium nitrate, on which in 1913 no less than 170 million marks were spent. Moreover, in 1926 the synthetic ammonia



MERSEBURG AMMONIA WORKS: INTERIOR OF AMMONIUM SULPHATE DEPARTMENT.

production permitted the export of 464,065 metric tons of ammonium sulphate, having a value of 112,610,000 marks, to say nothing of large quantities of other nitrogenous compounds. The imports of nitrogenous materials were naturally very small. Of the several processes known for the production of synthetic ammonia only the Haber-Bosch process has become developed in Germany on a large scale, and the use of this process is confined to two gigantic installations, one at Oppau and the other at Merseburg, both erected by the Badische Anilin und Sodafabrik, which last year became a part of the I.G.

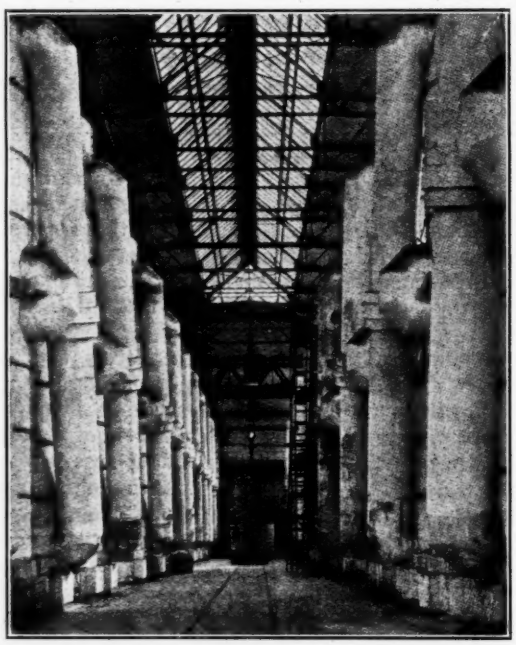
The Oppau works are situated 2 kilometres north of Ludwigshafen, on the Rhine. These came into operation in 1913, since when they have been frequently enlarged, and to-day have a yearly productive capacity of ammonia requiring about 100,000 tons of nitrogen. The Merseburg works are situated in the brown coal region of Saxony. These were built in 1917 and have a yearly capacity of producing ammonia requiring about 400,000 tons of nitrogen. The two works, therefore, have a productive capacity for nitrogen compounds calling for about half a million tons of nitrogen. The production of such a quantity of nitrogen involves the treatment of 540 million cubic metres of air. Reckoned as ammonium sulphate, the product would require for transport 160,000 railway wagons each containing 15 tons, which would make a train about 1,500 km. long.

The Lay-out of the Plant

Works of this type, involving the use of large quantities of gas, necessarily occupy a large superficial area. The Oppau works utilise nearly 2 square kilometres, while the Merseburg works have a total area for their purposes nearly three times as great. Each installation consists of a complex of several hundred large and small erections. The buildings in which the main operations are conducted, as well as those used to store the products, are large, lofty, well-lighted halls, constructed either of steel and reinforced concrete, or wholly of steel. The site of the Merseburg works was determined by its proximity to the brown coal supplies and, for the purposes of the works, several brown coal mines were acquired, which supply thousands of tons of coal daily for firing the steam boilers. These mines are linked up to the works by railways, the total length of which is about 24 km. For the production of gas for the process, however, coke is brought by rail from the Ruhr coalfield. The Oppau works have four large boiler houses and the Merseburg works seven. In the latter case the range of boiler installations stretches for 1·7 km. Both works have their own central electric stations for the supply of energy requirements.

What may be termed the lungs of the whole process are the great gas works, which are constructed wholly of steel. It is in the gas works that, with the aid of coal, the raw material for the synthetic ammonia production is obtained from air and water. The functions of the gas works consist of preparing on the one hand a gas containing mainly nitrogen with some hydrogen, and on the other hand a practically pure hydrogen gas. In both cases gas generators containing incandescent coke are used. For the nitrogen production air is blown through the hot coke under such regulation that the escaping gases consist practically of nitrogen and carbon monoxide, but no excess of oxygen. For the hydrogen production, the usual water-gas practice is adopted—that is, air and steam alternately are passed through the coke bed, and the products of the steam treatment, consisting practically of hydrogen and carbon monoxide, are treated to separate the hydrogen, as will be described at a later stage. With regard to the huge quantities of gas handled, the producer gas of the Oppau plant which is made and utilised every hour would suffice for the gas requirements of a town of 100,000 inhabitants for two full days, while a day's production of gas in the Merseburg works amounts to 5-6 million cubic metres, enough to supply Greater Berlin with gas for three whole days.

The next stage is the purification of the gases from carbon dioxide, for which purpose they go to a so-called "contact-hydrogen" plant. The two kinds of gas are mixed in such proportions that the purified product will contain nitrogen and hydrogen in the right proportions for producing ammonia. Steam is added and they are passed through the contact chamber containing the catalyst. In this chamber the carbon



MERSEBURG AMMONIA WORKS: "CONTACT HYDROGEN" PLANT.

monoxide is oxidised to carbon dioxide at the expense of the oxygen of the steam, and a corresponding quantity of hydrogen is produced at the same time. The following equation gives the course of the reaction—

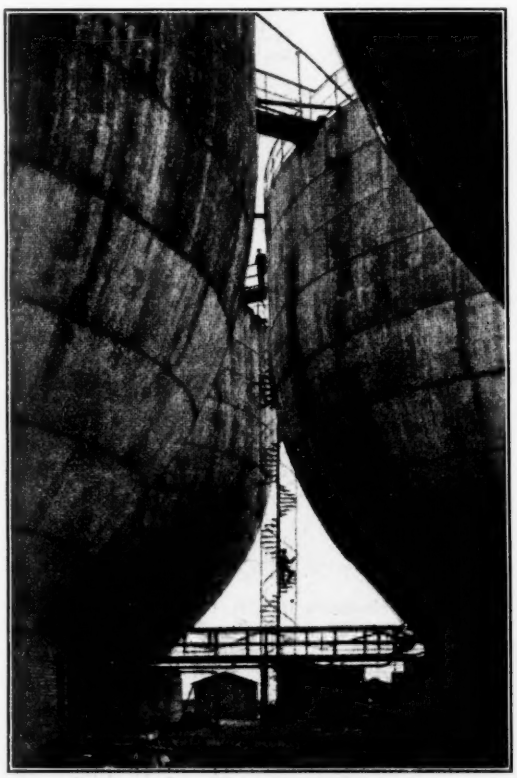
$$CO + H_2O = CO_2 + H_2.$$

The necessary heat is derived from the reaction, which is an exothermic one. This operation is carried out in large,

light, airy buildings in which may be seen a series of white-painted apparatus. The absence of noise, the very few attendants, and the absence of anything to suggest a chemical process are characteristic of this stage.

Preparing the Gases for Reaction

The gases leaving this contact chamber consist of hydrogen, nitrogen, and carbon dioxide, with a little carbon monoxide, and a small quantity of impurities. They are compressed to about 25 atmospheres and washed with water, which dissolves out the carbon dioxide. Incidentally, this carbon dioxide can be recovered from the water solution by releasing the pressure, and it will be seen later that it has an important use. The next stage in the process is the compression of the gas mixture to 200 atmospheres, which reduces the volume to about one two-hundredth of the volume at atmospheric pressure. This pressure is effected in the presence of a solution of certain copper salts, which removes the last traces of carbon monoxide and also the other impurities. The mixture of hydrogen and nitrogen is now sufficiently pure



MERSEBURG AMMONIA WORKS: AMMONIA SOLUTION CONTAINERS, CAPACITY 5,000 CUBIC METRES.

to go to the contact furnace, which may be termed the heart of the whole process. This high-pressure furnace is constructed of special steel to withstand the severe conditions, and is housed in great steel buildings strongly constructed. In passing through this furnace a proportion of the mixture combines to form ammonia; the gases leaving the furnace are conducted to an absorption plant. In this plant a water spray is used to absorb the ammonia, of which a solution of 25 to 28 per cent. strength is obtained. The unchanged gases are made up to the required volume by addition of fresh gas and are again passed through the contact furnace. The ammonia water is temporarily stored in large containers, some of which can hold 2,500 cubic metres, while others take twice as much. The ammonia water is the raw material for the subsequent operations. It is converted principally into ammonium sulphate.

In order that the process may be carried out without the use of imported material of any kind, the usual practice of absorbing the ammonia in sulphuric acid is replaced by a reaction in which gypsum—a natural calcium sulphate—plays the part of the acid, the production of which would otherwise involve the importation of pyrites or other suitable sulphides as the source of the sulphur. The I.G. owns the gypsum mines which supply the mineral for the works. The mines serving the Oppau plant are in Lower Saxony, while those which supply the Merseburg works are in the Neckar Valley. The gypsum is brought to the works by railway. On reaching the works the gypsum is finely ground in milling plants and made into a slurry with water, into which ammonia and carbon dioxide are led. These react, and the products are ammonium sulphate, which remains in solution, and calcium carbonate, which can be removed from the above solution by filtering. The filtrate from this operation is then evaporated to yield solid ammonium sulphate crystals. The reaction between the ammonia, carbon dioxide, and gypsum is indicated by the following equation—

$$2NH_3 + CO_2 + H_2O + CaSO_4 = (NH_4)_2SO_4 + CaCO_3.$$

The source of the carbon dioxide has been already indicated above; it is seen that it becomes an important reagent in the sulphatising of the ammonia.

By a series of transporting devices, which almost entirely exclude the human element, the ammonium sulphate is collected and transferred to silos or storage buildings, consisting of broad spacious buildings large enough to contain the population of a medium sized town. The material is discharged at a height which permits huge piles to be made. The Oppau storage capacity is about 5,500 tons; the Leuna works have storage for about a quarter of a million tons.

Both the Oppau and Merseburg works are well equipped with all necessary workshops, making them almost self-contained. Laboratories are provided in which constant research is maintained with a view to improving the efficiency of the process and plant. In the chemical department, also, all material coming into the works and also all products leaving it, are subjected to chemical tests. Besides ammonium sulphate, which is the main product, a number of other nitrogenous compounds are manufactured from the synthetic ammonia. These include ammonium chloride, sodium saltpetre, lime saltpetre, Leuna saltpetre, potash-ammonia-saltpetre, urea, urea-potash-phosphor BASF, and Nitrophoska.

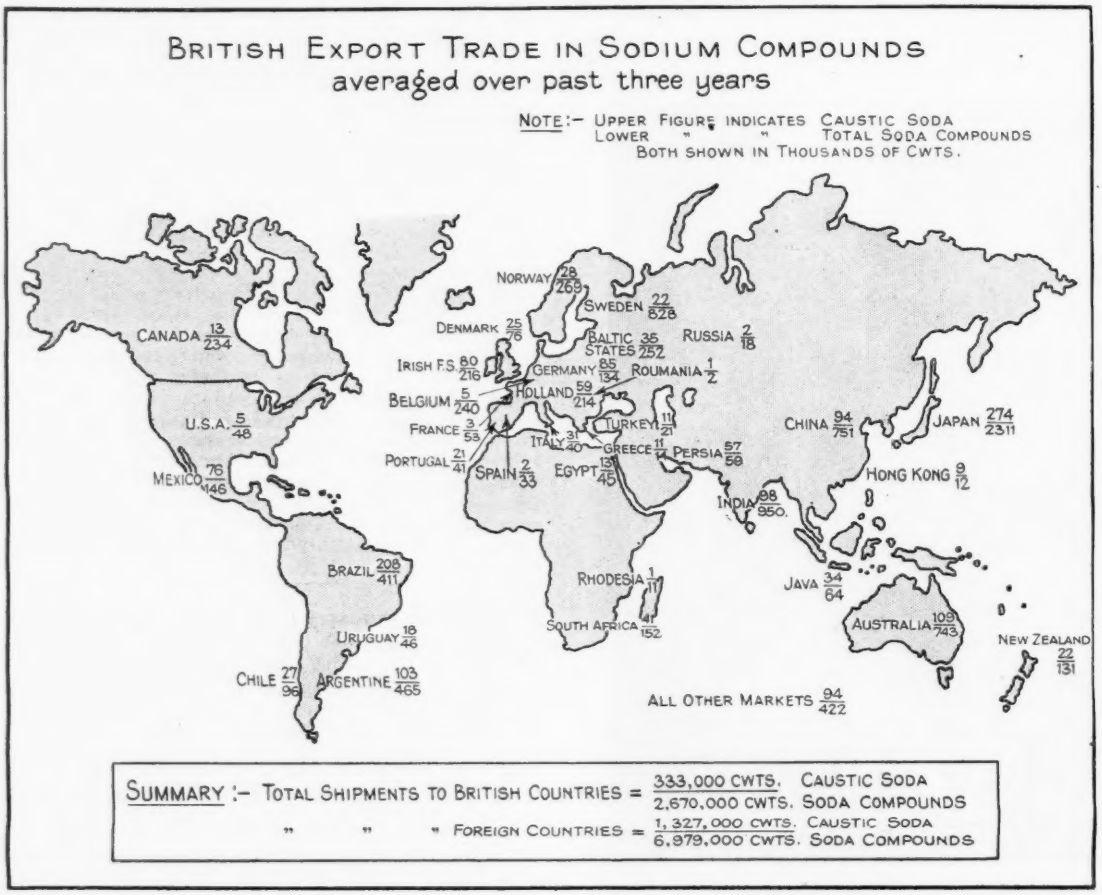
Nitrogen in Industry: Canadian Research Bulletin

THE National Research Council at Ottawa has just issued its Bulletin No. 12, dealing with "Nitrogen in Industry." It is pointed out that nitrogen and its compounds play a large and increasingly important part in human welfare. Nature has provided in the atmosphere an inexhaustible supply of this element, but as a gas it is so inert that man has been forced to exercise the greatest ingenuity to devise commercial methods for its fixation. His success in accomplishing this task may be judged from the fact that the amount of nitrogen derived from the air is now considerably greater than that from either of the other two important sources—bituminous coal and the great Chilean deposits of sodium nitrate. Part I of this bulletin deals with the sources of nitrogen and the methods adopted for its commercial recovery. The use of nitrogen as a fertiliser completely overshadows in importance all other applications, and a still further increase in its use may be expected as improved methods lower the cost of production. In addition, nitrogen finds important uses in the manufacture of explosives and dyes, in refrigeration and a multitude of minor applications. The principal fertilisers containing nitrogen, potash, and phosphoric acid, and the rôle of these plant foods in agriculture, are all briefly discussed in Part II. Part III is devoted to the properties, methods of manufacture and uses of urea, which has recently been placed on the market as a fertiliser in Europe and is now being introduced into America. It is the most concentrated nitrogenous fertiliser yet produced, and possesses many other desirable properties. Much scattered information regarding this important compound of nitrogen is here brought together and summarised. Copies of the bulletin in question will be available shortly for distribution from the Natural Resources and Industrial Information Branch, The Canadian Building, Trafalgar Square, London, S.W.1.

British Export Trade in Caustic Soda

Comparison with All Sodium Compounds

In the map is shown an analysis of British caustic soda exports to the main markets of the world and these are compared for each country with the British exports of all classes of sodium compounds. From this, certain facts are to be deduced. In the first place by far the most outstanding of our caustic soda markets is Japan. Consignments to this country over the past three years have averaged 274,000 cwt. per annum and actually rose as high as 349,000 cwt. in 1925. Our second largest world customer is Brazil with an annual average of 208,000 cwt., the highest individual shipments here in a recent year being 257,000 cwt. in 1924. Third in importance will be noted Australia with an average of 109,000 cwt. and this is the steadiest purchaser among our foremost markets, as the actual shipments each year deviate only very slightly from the average given.



Taking the caustic soda exports by groups it is apparent that British countries throughout the world receive 20 per cent. of our total and that therefore four times as much is consigned to foreign countries.

Looking at these exports in yet another manner, it may be seen that our shipments may be classified to include three well-defined groups of markets, each being of almost exactly similar proportions. Thus of the whole of our overseas trade in caustic soda European countries take 22 per cent. or slightly more than the combined countries of South America, which demand 21 per cent., and just less than the countries of the Far East, including Japan and China, which take another 23 per cent. of the whole.

To deal with these markets in more detail, the major buyer among European countries is Germany, which in one recent year has taken from us close upon 130,000 cwt. Holland demands nearly 60,000 cwt. a year and is here the next in importance, being followed in order by Italy, which although averaging 31,000 cwt. per annum has recently in a single year taken as much as 58,000 cwt. Among the northern continental markets Finland, Sweden, Norway, and Denmark each purchase between 25,000 cwt. and 30,000 cwt. per annum, whilst in the Near East practically all markets, including Greece, Bulgaria, and Roumania, are buyers, although on a minor scale.

With countries of the American continent Canada and the United States are amongst our smallest customers for caustic soda, but all the countries to the south are important. Brazil buys from us more than 200,000 cwt. each year, Argentine is a purchaser of more than 100,000 cwt., Mexico takes variable quantities ranging between 60,000 cwt. and 100,000 cwt. each year, whilst Chile and Uruguay are also purchasers.

Turning to the larger totals representing the whole range of sodium compounds, the total British export trade is now averaging each year approximately 10,000,000 cwt. Of this more than one-fifth goes to Japan, another one-tenth to India, whilst taken altogether, the countries of the Far East account for 40 per cent. of the total world demand for British sodium compounds.

Shipments to European countries exceed 2,000,000 cwt. or approximately 20 per cent. of our entire sodium export trade. Countries of the American continent take nearly 1,500,000 cwt. per annum or something like 15 per cent. of the whole.

One outstanding feature in the Japanese and Indian demands, which adds materially to the advantage of their bulk, is the sustained confidence with which we can rely upon those from the former amounting to over 2,200,000 cwt. each year and from the latter over 950,000 cwt.

An Evening with the Chemists

Chemical Society's Annual Dinner

WHEN the guests at the anniversary dinner of the Chemical Society took their seats in the Edward VII Rooms at the Hotel Victoria, on Thursday evening of last week, they looked an attractive company and one felt somehow that the atmosphere was just the right atmosphere for a pleasant evening. There was no worldly talk about industry or profits; the pure scientists firmly excluded such things from their minds, and gave themselves up to talking about science—and about themselves. For so learned a company, they talked, too, in an astonishingly light-hearted way, taking liberty with one another's reputations, gently poking fun at one another's theories, and demonstrating in this convincing way what good friends they all really are. A touch of international character was given to the gathering by the presence of Professor Camille Matignon, representing the Société Chimique de France, and Professor Wilhelm Schlenk, president of the Deutsche Chemische Gesellschaft—and two more perfect types of these very different races could hardly have been selected. The dinner was good, and Mr. S. E. Carr, the assistant secretary, saw, as usual, that the arrangements were free from imperfections.

It was Lord Sumner who started the frivolous note in proposing the toast of "The Chemical Society." He did not send us into fits of laughter, but like a skilful angler he kept the company on the titter for a good quarter of an hour. At the end of it everybody was in good humour, and nobody could recall exactly what he had said—which is very good after-dinner speaking indeed. Listening to his innocent patter, one wondered could this possibly be the same learned judge of appeal who for seven solid days sat through a dreary technical action without uttering a single word and then, on the eighth, quietly broke the long silence with the surprising remark—"My God!"

Professor Brereton Baker, the president of the Society, in responding, met the judge's challenge to gaiety very well. He captured us all at once by publicly confessing his weakness for hypothesis and inferentially asking for forgiveness; and he also told a neat story about Jowett on the same subject. In his Balliol days, the great Master once said to him: "What are you doing, Mr. Baker? Are you doing anything in the way of theory?" Young Baker confidently replied: "I have a new theory, sir, of chemical attraction that will upset the whole of the present chemical theories." "Then," said Jowett gravely, "Write it down very fully, put it away in a drawer, and lock it up for ten years." "And then," said the young theorist eagerly, "publish it?" "On no account," replied Jowett, "burn it."

The Chairman's speech included a dignified reference to the death of two past presidents of the Society. "We have," he said, "to lament this year the death of two of our past presidents—the youngest Dr. A. W. Crossley and the oldest Sir William Tilden. Dr. Crossley was cut off from his term of office by illness, and only a few weeks ago the illness terminated in his death. He will be remembered as a man of extraordinary business instincts, understanding, and chemical talent, and as the director of one of the most important and successful of the research associations set up by the Department of Scientific and Industrial Research. Sir William Tilden was connected with the Chemical Society at a time when most of us were unborn; he was a great chemist in a great generation. Those of us who occupy these positions with a history behind them cannot but feel the responsibility of being inheritors of a great name and a great lineage."

Sir William Pope, in proposing the toast of "The Guests" (Sir Ernest Rutherford, Professor Matignon, and Dr. Schlenk), gave us a light characterisation of each of them in turn. Of Sir Ernest, he remarked that when the historian came to sum up his work two or three centuries hence he would pronounce him one of the greatest chemists of the first quarter of the twentieth century. At the same time he playfully warned him that if he had his eye on a certain Chair of Chemistry it would not be vacant for some time yet. Professor Matignon he referred to as a man of great personal charm, and as a chemist who had the great gift of linking up the most recondite problems of chemical theory with practice. Dr. Schlenk they welcomed, not only as president of the German Chemical Society but as a worthy successor of a line of great German chemists and as one who had done valuable work on the great problems of organic chemistry. Regret was expressed at the absence through illness of Prince Conti, representing Italian chemical interests.

The three responses were in agreeable contrast. Sir Ernest Rutherford, with a Colonial breeziness, expressed the hope that the close and sympathetic relations between chemistry and physics would continue, and that in the course of a generation perhaps the problems they were engaged on might be nearer settlement. Professor Matignon, reading from typescript in French, gave us a most impassioned speech, full of generous sentiments. In delivery and substance and manner, it was a typical French utterance from a handsome and polished French gentleman. And finally came Dr. Schlenk, speaking in English rather laboriously but with a simplicity that appealed to the company. His text was the maintenance of good international relations between men of science and nations generally.

Among those present were:—Professor H. B. Baker (in the chair) and Mrs. Baker, Lord Sumner, Sir Ernest Rutherford (president of the Royal Society), Sir William Pope, Professor Matignon, Dr. Schlenk, Professor Smithells (president of the Institute of Chemistry), Sir Frank Heath, Mr. and Mrs. Chaston Chapman, Mr. F. H. Carr (president of the Society of Chemical Industry) and Mrs. Carr, Sir Robert and Lady Robertson, Professor J. F. and Mrs. Thorpe, Professor Donnan (Foreign Secretary), Mr. S. R. Bolton (president of the Society of Public Analysts), Sir Richard Gregory, Sir Alexander Gibb (president of the Institution of Chemical Engineers), Mr. C. A. Hall (chairman of the Association of British Chemical Manufacturers), Professor J. S. S. Brame, Mr. F. W. Clifford (librarian), Professor J. C. Drummond, Mr. Bernard and Mrs. Dyer, Mr. C. S. Gibson (secretary), Professor A. G. and Mrs. Green, Professor J. W. Hinchley, Mr. E. Grant Hooper, Professor Lowry, Mr. G. S. W. Marlow, Professor Irvine Masson, Dr. and Mrs. Miall, Dr. F. A. Freeth, Professor J. C. and Mrs. Philip, Professor W. P. Wynne (past president), Mr. T. Slater Price (secretary), Mr. S. E. Carr (assistant secretary), Dr. N. V. Sidgwick, Mr. Clarence Smith (editor), etc.

Annual Meeting of the Society

Presentation of the Longstaff Medal

The annual general meeting of the Chemical Society was held at Burlington House, on Thursday, March 24, the President (Professor H. B. Baker) occupying the chair. At the conclusion of the formal business of the meeting, the President presented the Longstaff Medal to Professor R. Robinson, of Manchester, stating that it was the highest distinction the Society could bestow on one of its Fellows and that it was awarded in recognition of his outstanding work on the chemistry of the alkaloids, on his researches on the constitution and synthesis of the colouring matters of flowers, and his studies of the mechanism of reactions in organic chemistry.

The President also announced that it had been found possible to make the first award of the Harrison Memorial Prize under the terms of the Trust Deed. The prize for 1926 had been awarded to Dr. Charles R. Harington for his investigations which have led to a greatly improved method of separating the pure hormone from the thyroid gland and finally to the synthesis of thyroxine.

After the delivery of his address entitled: "Experiments on Molecular Complexity," which will appear in the *Journal of the Chemical Society* for April, the President announced the results of the election to vacancies on the Council as follows:

President.—H. Brereton Baker.

Vice-Presidents who have filled the office of President.—H. E. Armstrong, H. B. Dixon, Percy F. Frankland, Alexander Scott and W. P. Wynne.

Vice-Presidents who have not filled the office of President.—J. B. Cohen, G. G. Henderson, Sir Robert Robertson, R. Robinson, N. V. Sidgwick, Arthur Smithells.

Treasurer.—Jocelyn F. Thorpe.

Secretaries.—T. Slater Price and C. S. Gibson.

Foreign Secretary.—F. G. Donnan.

Ordinary Members of Council.—M. P. Applebey, H. Bassett, E. R. Bolton, H. V. A. Briscoe, J. E. Coates, J. C. Drummond, F. A. Freeth, F. W. Gamble, R. Whytlaw Gray, J. Kenyon, T. J. Nolan, K. J. P. Orton, R. H. Pickard, B. D. Porritt, E. K. Rideal, J. F. Spencer, G. Stubbs, F. J. Wilson.

Lubrication Problems

Paper by Dr. Ormandy

At a joint meeting of the Institution of Mechanical Engineers with the Chemical Engineering Group of the Society of Chemical Industry on Friday, March 25, Dr. W. R. Ormandy read a paper on "Lubrication." The early part of the paper gave a brief history of the effects of the new discoveries relating to the theory of the atom and the molecule on the problem of lubrication, reference being made to the work of Sir William Hardy, Langmuir, Shearer, and others. This part of the paper considered the problems of the interfaces formed by contact of a bulk liquid with gaseous and other faces, and the properties of interfaces. The latter part of the paper dealt with one or two aspects of the lubrication problem having a more immediate and practical bearing on every day problems.

The Question of Oxidation

All mineral lubricating oils absorbed oxygen, and the rate of this absorption varied very greatly with the nature of the oil, the degree of refinement, the temperature, and the presence of metallic bodies which acted as catalysts. Most lubricating oils were used under conditions where a temperature-rise was to be expected, and almost always in contact with oxygen of the air. Moore had pointed out that in his experience the most frequent cause of damage in modern machinery due to defective lubrication arose from the result of oil oxidation. It was not that the oxidised oil lost much, if any, oiliness for a considerable time, but the products of oxidation might be asphaltic-like bodies which were insoluble in the oil, and so led to stoppage of the oil ducts. Frequently the result of oxidation was the production of acid bodies which caused the oil to form a thick emulsion with comparatively small quantities of water, and this emulsion would not pass readily through the circulating system employed. Generally, in order to test an oil for its behaviour as regards oxidation, it was heated to a given temperature and air or oxygen blown through for a given time. The oil was then tested for the amount of asphaltic matter which had been formed.

It had been shown that oils could be too much as well as too little refined, and that oxidation was more rapid with over-refined oils than with others. Again, the rate of oxidation was influenced by the nature of the vessel in which the test was carried out. Iron, copper, lead, and zinc all influenced the rate of oxidisation greatly, but in very different degree. It was even possible to mark the different influence of copper that had been cleaned by mechanical rubbing and that which had been cleaned by reduction after heating in methyl alcohol. There was no doubt that finely divided metals greatly increased the tendency of oils to oxidise.

Possible Lines of Investigation

It was quite obvious from even such a superficial consideration of some aspects of the lubrication problem, that a solution would not be found by the chemist or the physicist or the engineer working alone, nor was it likely that any fundamental knowledge would arise without the co-operation of all three acting together with the oil producer. They wanted to know if the characteristic of the oil was conditioned by nature, or that it was impossible by any sort of refining to get from, say, an asphaltic base oil a product which would replace another produced from a paraffin base oil. Did the sulphur present in a lubricating oil act through its compounds to bring about easy oxidation, or was the sulphur merely an indication of the presence of other organic bodies, themselves readily oxidisable? To what degree should refinement be carried to get an optimum product, and what were the bodies which, being deleterious owing to their unstable chemical nature, had to be removed? Had they to regard sulphuric acid treatment as the last word in oil refining? Must an asphaltic base oil, after refining, still tend more towards the production of asphaltic bodies on oxidation than paraffin base oils? Were some metals such active catalysts in the finely divided state that it would be well to eliminate them from bearing metals?

The artificial silk agreement recently announced is said by Mr. Roscott, the American representative of the Köln-Rottweil Co., to involve other firms than Courtaulds, Glanzstoff, Bemberg, Snia Viscosa, and Euka. He added that representatives of the I.G. were visiting Mexico with a view to choosing a site for the erection of an artificial silk factory.

Affairs of John Bell and Croyden, Ltd.

Voluntary Liquidation with Advisory Committee

A largely attended meeting of the creditors of John Bell, and Croyden, Ltd., Wigmore Street, London, and Tottenham, London, was held on Thursday, March 24, in London. The chair was occupied by Mr. Parkin S. Booth, of the Association of Manufacturing Chemists, who stated that the company had gone into voluntary liquidation, and had appointed him to act as liquidator in conjunction with Mr. H. Hackett.

No statement of affairs was circulated, but Mr. Hackett read figures which showed unsecured liabilities of £59,193, of which £41,499 was due to the trade, and £17,694 to cash creditors. In addition there were preferential claims of £5,067, first debentures £118,240, second debentures £10,000, five year bondholders £33,400, and interest accrued £5,304. According to the books the gross assets totalled £206,194, but the net assets were £34,181, showing a deficiency, so far as the creditors were concerned, of £25,011.

Mr. Booth reported that the company was registered in May, 1921, with a nominal capital of £150,000, subsequently increased to £175,000. It was formed to acquire the businesses carried on by John Bell and Croyden, Ltd., and Langham Brothers, Ltd. In October, 1921, the business of Arnold and Sons was acquired. During the fourteen months to April 30, 1922, there was a profit of £37,658. For the fifteen months to July 31, 1923, there was a loss of £74,375, and in the following six months there was a further loss of £31,788. During the twelve months to January 31, 1925, the loss was £25,040, whilst for the year to January 31, 1926, there was a loss of £26,903. The directors had for some time made every effort to obtain further capital to keep the business together, but had failed. The company had been faced with a heavy liability in respect of debenture and loan interest, and had also suffered through lack of working capital. He had been informed by the receiver for the debenture holder that a provisional contract for the sale of the whole of the businesses was being drafted for submission to the Court for approval. He could not say what sum the purchase price represented, but he could state quite definitely that the amount, if approved by the Court, was not likely to prove sufficient to discharge the claims of the first debenture holder, and consequently there would be nothing whatever for the second debenture holder, the bondholders, the unsecured creditors or the shareholders. The only possibility he could see of the creditors receiving anything was some scheme of reconstruction.

The chairman said that unless they found someone who had faith in the business and would pay off the debenture and preferential claims there was not the slightest hope of anything coming to the creditors.

Mr. P. Houstoun, of the British Traders' Association, proposed a resolution to the effect that the voluntary liquidation of the company should be continued with Mr. Booth and Mr. Hackett as joint liquidators. An amendment in favour of the company being wound up under the supervision of the Court was defeated, and the resolution was carried with only two dissentients. An advisory committee of three of the principal creditors was appointed.

A Strange Chemical Accident

George Miller (16), of 13, Great Orford Street, Brownlow Hill, Liverpool, is at prseent lying in the Royal Infirmary, suffering from extensive burns about the stomach and hands, which were brought about in an extraordinary way. The youth, who is employed at Towers's chemical works in Brownlow Hill, found at the works a small quantity of sodium peroxide in a tin, and, with the intention of trying an experiment at home, put a small portion in a piece of paper, and placed it in his jacket pocket. While he was having tea at his home the same evening, he accidentally spilt a cup of tea, and some of the liquid fell on his coat. Percolating the cloth, it reached the powder in his pocket, with the result that there was a loud explosion, and his clothing burst into flames. Water was thrown over the boy, but that only seemed to make his clothing burn more fiercely, but eventually the flames were extinguished, and he was taken to the infirmary by ambulance.

Brunner, Mond, and Co.'s Annual Meeting

AT the annual meeting of Brunner, Mond and Co., held on Wednesday in London, Sir Alfred Mond (chairman) moved: "That the directors' report and statement of accounts be adopted, and that the following dividends be paid for the nine months ended December 31, 1926, viz.:—(1) To the holders of preference shares at the rate of 7½ per cent. per annum less income-tax and less the interim dividend paid in December last. (2) To the holders of ordinary shares at the rate of 10½ per cent. per annum less income-tax, and less the interim dividend paid in December last."

The effect of the strike in increased cost of fuel and decreased trade he estimated at about £500,000. They raised their prices slightly in agreement with their customers, but they carried the greater part of the burden in continuing their works on imported coal. The additions to plant during the nine months of £306,000 were additions to complete the Wallerscote works, which were now operating successfully. They had written off £296,000, very largely the result of improvements which necessitated the writing off of plant which had become obsolete. Owing to the shutting down of steelworks they were unable to get material to complete the programmes at the Wallerscote works and those of Synthetic Ammonia and Nitrates, Ltd., so that construction work had been delayed by a good many months, and had prevented them producing the output and making the profits expected.

The resolution, seconded by Sir John Jarmay, was carried, as were also resolutions re-electing Mr. Duncan Marsh a director of the company; re-electing the six retiring members of the board—namely, Sir John Brunner, Mr. A. Colegate, Mr. H. Glendinning, Lieut.-Colonel G. P. Pollitt, Mr. C. F. Poole, and Mr. Louis Solvay; and voting to the directors, other than those under written agreement, remuneration at the rate of £500 per annum for services rendered during the nine months ended December 31.

The auditors were reappointed, and, on the motion of Mr. Henry Mond, seconded by Colonel Pollitt, warm thanks were conveyed to the staff and workmen of the company for their excellent work during the year.

Sir Max Muspratt on British Industry

SIR MAX MUSPRATT completed his year as President of the Federation of British Industries on Wednesday and was succeeded by Lord Gainford. Sir Max, in reviewing the work of the year, said they could take a fairly optimistic view if they did not expect marvels to happen in an unreasonably short period of time. If so much of our industry could be maintained under the serious conditions of last year, it was not unreasonable to expect that portion to continue and to expand. In addition, there was every sign that our export trade would reach a new normal standard not appreciably worse than our pre-war condition. One of the most encouraging developments of his year of office were the conferences of the Federation of British Industries with fellow industrialists from other leading countries. A better atmosphere had been created, and this alone must count for something in the economic life of Europe. In laying down the reins of office his final word was:—"The times are past when industry can work in watertight compartments. Not only must the industrialist understand his own industry, but he must understand its relation to other industries; moreover, he must understand the social and economic problems of the nation and the world, and to the best of his ability and circumstances he should take his place as a leader in solving these problems."

Safeguarding of Key Industries

THE Board of Trade give notice that representations have been made to them under Section 10 (5) of the Finance Act, 1926, regarding the following articles:—dial (acid di-allyl barbituric); elbon (cinnamoyl para-oxyphenylurea); integrators (planimeter type); R. lead acetate; lipoiodin (ethyl di-iodo brassidate); phytin (calcium magnesium inosite hexaphosphate); planimeters.

Any person desiring to communicate with the Board of Trade with respect to the above-mentioned applications should do so by letter addressed to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George Street, S.W.1, within two months from the date of this notice (March 30).

Chemical Matters in Parliament

Chemical Substances in Flour

Mr. R. J. Wilson (House of Commons, March 24) asked the Minister of Health whether he proposed to set up an inquiry into the physical, as opposed to chemical, methods of improving flour, which were mentioned with favour in the Report of the Departmental Committee on the Treatment of Flour with Chemical Substances. Mr. Chamberlain replied that he understood that the improvement of flour by physical means was still in an experimental stage, and that, before making their Report, the Departmental Committee on the Treatment of Flour with Chemical Substances had before them all the evidence that was at present available on the subject. In these circumstances he did not propose to set up any further inquiry into the question at the present time.

Gas Light and Coke Co.'s Carbonisation Tests

Mr. H. Williams (for Sir F. Sanderson) (House of Commons, March 28) asked the President of the Board of Education if he was aware that there were two experimental plants for the low carbonisation of coal being, or shortly to be, erected at the works of the Gas Light and Coke Co., one to the specification of Mr. Hird, of Bradford, and one to the specification of the Fuel Research Board, both of which were to be tested by the Fuel Research Board; and whether he was in a position to give any information as to the probable date of the tests to be made or any other developments in connection therewith? The Duchess of Atholl replied that the President was aware that the Gas Light and Coke Co. were considering the erection of a low-temperature carbonising plant of the type devised by His Majesty's Fuel Research Station, but at the present stage he would prefer to make no further statement. With regard to the other plant referred to, there was no information.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

35 (*Water-proof Paint*).—"Can you recommend a formula for making a water and weatherproof white or coloured paint for asphalt-paper (roof-paper)?"

36 (*Sodium Tungstate and Tungsten Powder*).—"I should like to know if there is much demand for sodium tungstate and tungsten powder in England or a market elsewhere. Recently I have made an examination of a mine in Cornwall which contains a large proportion of wolfram associated with tinstone in the ores. This mine will probably be worked in the near future and the tin separated from the wolfram by magnetic separators. If sodium tungstate and tungsten powder were produced on the property I should think they would be more marketable than the wolfram ore. I should like to know of a suitable and economical process for effecting this desired object."

37 (*Japan Wax*).—"We should be pleased if you could give us the name of a good firm for the supply of Japan wax."

38 (*Palmitic Acid and Japan Wax*).—"Can you supply us with a list of firms manufacturing palmitic acid and refining Japan wax?"

Tar Residuals, Ltd.

SIMON-CARVES, LTD., 20, Mount Street, Manchester, announce that they are amalgamating their tar products business with that of Walter Waugh and Co., Ltd., of London, and Walter H. Brown and Co., Ltd., of London. For this purpose the three businesses are being transferred to a new company which has been registered under the name of Tar Residuals, Ltd. The new business will be carried on in the same manner, and under exactly the same management as the old. The London office of Tar Residuals, Ltd., will be at 4, Lloyd's Avenue, and the Manchester office at 20, Mount Street. Similar notices are being issued by Walter Waugh and Co., and Walter H. Brown and Co., adding that the board of the new company will consist of the three directors of each of the above firms, together with three of Simon-Carves' directors who have in the past looked after this portion of their business.

From Week to Week

DR. P. SPIELMANN on Tuesday evening broadcast by wireless an address on " The Scientific Man and the Public " from 2LO.

MR. ALEX. M. SMITH, of Edinburgh, has been appointed Lecturer in Agricultural Chemistry at Manchester University, and adviser under the Ministry of Agriculture's Advisory Scheme.

THE GERMAN I.G. FARBENINDUSTRIE has asked the Chilean Government for the exclusive patent rights to a process which is described as destined to improve the production of nitrates in Chile.

RECENT WILLS INCLUDE: Mr. Thomas Warburton, of Alderley Edge, Cheshire, managing director of the Bleachers' Association, Ltd. (net personalty £60,770), £65,092.—Mr. William James Emery, of Stoke-on-Trent, colour manufacturer, £6,501.

BRUNNER, MOND AND CO., LTD., announce a change in the address of their London sales office from 7, Cavendish Square, W.1, to 8, Grosvenor Gardens, S.W.1. This change became effective as from March 29. The telephone number will be Sloane 5918.

PROFESSOR H. B. BAKER, president of the Chemical Society, and Sir F. G. Hopkins, professor of bio-chemistry in the University of Cambridge, were invested with the LL.D. degree of the University of Aberdeen at the graduation ceremony held on Wednesday, March 23.

A FIRE OCCURRED on Monday at the chemical works of Alfred Smith, Ltd., of Hull. About 20 tons of sulphur were ignited. The fire brigade and employees of the firm, who had to wear smoke helmets and masks, were engaged for three hours in extinguishing the fire. Considerable damage was done to the machinery.

THE PRODUCERS' ASSOCIATION, according to a report dated March 24, reported further sales of nitrate of soda amounting to 160,528 metric quintals, these having been disposed of for delivery during the present nitrate year. Total sales of the fertiliser for delivery during the current season are now 10,885,667 metric quintals.

THE ENGAGEMENT IS ANNOUNCED of Mr. J. Paravicini, a director of Bell's Poilite and Everite Co., to Miss W. M. Stewart-Brown, niece of Sir Max Muspratt. Bell's Poilite and Everite Co. was formed in 1922 by the amalgamation of the Everite Works, of Farnworth, Widnes, with the Poilite section of Bell's United Asbestos Co. Mr. Paracivini is also a director of the Asbestos Building and Technical Co., of Manchester.

" INDURITE " was the subject of a paper read by Mr. W. Hunter at a meeting of the Royal Society of Arts at Edinburgh on Monday. The lecture dealt with the evolution of a new industrial by-product, known as " Indurite," which was prepared from a waste product of paper mills. Up to a few years ago a spongy sludge residue was thrown on the waste heaps, but in 1921 a process was discovered for the utilisation of this material. The product is in the form of resins which possess very distinctive properties and which pass through three separate and distinct phases—liquid, semi-solid, and hard, impervious solid.

THE NICHOLS MEDAL of the New York Section of the American Chemical Society, which is given for the purpose of encouraging original research, was awarded on March 11 to Dr. R. Adams at a meeting of the Section. The award was made on the basis of Dr. Adams's work on " The Acids of Chaulmoogra Oil and Related Compounds." Arising out of this work, a number of new compounds have been synthesised from chaulmoogric and hydnocarpic acids, these new compounds having stronger action on the organism of leprosy than the natural acids. Therapeutic tests are being carried out by Dr. Lara in the Philippines.

PROFESSOR ARTHUR SMITHELLS, President of the Institute of Chemistry, who was the guest at dinner on Friday, March 25, of the Newcastle Chemical Industry Club, recalled that his first visit to Newcastle was in 1889, on the occasion of the British Association meeting, when he saw the first exhibition of moving pictures. He came again in 1890, bringing liquid air to the city—the first person to do so, he believed—and then in the early days of gas warfare he was again a visitor, this time to lecture on gas to representatives of the Army. Professor Smithells' most vivid recollection of this was that he nearly asphyxiated an important general with chlorine gas.

THE MONCKTON COKE AND CHEMICAL CO., LTD., have placed an order with Simon-Carves, Ltd., for a battery of 20 regenerative coke ovens, to be erected at the New Monckton Collieries, near Barnsley. The ovens, which are of the latest " under-jet " type, will be built of high silica bricks which permit of considerably higher temperatures being employed in the carbonisation process than is usual with ovens constructed in fireclay bricks, which have until recently been generally used in this country. A great reduction in the coking time is by this means obtained with consequent corresponding increase in the output of coke and by-products per unit. In addition to the battery of ovens, the Monckton Coke and Chemical Co. have placed an order for an extension of their by-product plant to deal with them, and for plant for the dewatering of the small coal which is to be treated in their coke ovens subsequent to its being washed o remove mineral impurities.

AN EXTENSIVE CEMENT WORKS is to be erected at Pitstone, near Aylesbury, the Ministry of Transport having approved plans of the scheme.

DR. H. HOULSTON MORGAN, of Naylor Brothers, Ltd., formerly president of the Oil and Colour Chemists' Association, left England on Thursday on a visit to America.

A FIRE at the oil works of P. and W. Hall, Ltd., of Kyle Street, Glasgow, on Thursday, March 24, caused damage estimated at between ten and fifteen thousand pounds.

THE FINAL INDIAN INDIGO CROP forecast for 1926, covering about 85 per cent. of the total indigo area of India, is 20,100 cwts., as compared with a forecast of 28,200 cwt. in 1925.

THE total imports of chemicals, drugs, dyes and colours into Malaya during 1926 amounted to £2,596,959, as compared with £1,823,276 in 1925, which represents an increase of 42 per cent.

THE INDIAN LEGISLATIVE ASSEMBLY on Monday agreed by 52 votes to 41 to the decision of the Council of State restoring the salt duty to 20a. per maund from the 10a. per maund to which it had been lowered by a previous vote in the Assembly.

MR. LIONEL ROBINSON announces that he terminated his agreement with Henry Wiggin and Co., Ltd., as London manager on March 31. From that date he acts as London consultant for them and will continue his business at Staple Inn, from where, by arrangement with Henry Wiggin and Co., Ltd., he will factor all their nickel and nickel alloy products.

MR. R. JACKSON, at a meeting of the Institution of Engineers and Shipbuilders in Scotland, at Glasgow, recently read a paper on " Modern Developments in Pulverised Coal Firing." Belgium, France, and Germany were, he said, greatly ahead of Britain in this matter, and in the United States its growth had been almost phenomenal. Great Britain could not, in his opinion, neglect the moves of trade rivals, and might with profit follow their example, or, much better, lead the way.

THE ANNUAL MEETING of the Edinburgh and East of Scotland Section of the Society of Chemical Industry was held on Friday, March 25. Mr. W. A. Williams was in the chair. The following officers were elected: Chairman, Major R. Bruce, F.I.C.; vice-chairman, Dr. W. T. H. Williamson; hon. secretary and treasurer, Mr. W. M. Ames, M.A., B.Sc. Vacancies on the committee were filled by Professor J. Reas, Mr. W. A. Williams, F.I.C., F.R.S.E., Dr. W. O. Kermack, Mr. James Strachan, and Mr. James Sandilands, B.Sc.

HERR ARNOLD RECHBERG, a prominent German industrialist, recently expressed the view that Britain should participate in the Franco-German industrial alliance. To Sir Alfred Mond's expressed opinion that the chief interests of Great Britain were not European but Imperial, Herr Reichberg replied that he quite agreed that an organisation throughout the British industries would be the first step which should be taken in England. On the other hand, he could not agree with Sir Alfred as to his opinion that there was no reason why English industry should become a partner of the Franco-German industrial alliance.

INTERNATIONAL COMBUSTION, LTD., announce that they have been instructed to proceed with a repeat order from the Derby Corporation Electricity Department for the supply of an additional 80,000 lb. boiler complete with drying equipment, " Lopulco " water cooled combustion chamber, superheaters, economisers, draught equipment, dust catching apparatus, and stacks. This order follows a successful trial carried out by an independent consulting engineer for a period of 100 hours and 33 mins. under all conditions of load, when it was officially established that the efficiencies obtained under these daily operating conditions exceeded the guarantees, even when taking into consideration that the fuel used throughout the trial had an average calorific value of 9,930 B.Th.U.'s.

APPLICATIONS ARE INVITED for the following appointments: A Ramsay Memorial Fellowship for Chemical Research, £250 plus £50 for expenses. The Secretary, Ramsay Memorial Fellowship Trust, University College, Gower Street, London. June 6.—Assistant Government Chemist for Forest Research in the Federated Malay States. £560—£35—£1,120, plus allowance. The Private Secretary (Appointments), Colonial Office, 38, Old Queen Street, London, S.W.1. April 15.—Officer-in-Charge of the Wood Preservation Section of the Forest Research Institute, Dehra Dun, India. Rs. 1,350—Rs.50—Rs. 1,450 per month. The Secretary to the High Commissioner for India, 42, Grosvenor Gardens, London, S.W.1. April 8.—Demonstrator (man or woman) in the Chemistry Department of Bedford College for Women (University of London), Regent's Park, N.W.1. £250—£300. The Secretary. May 7.—Head of the Chemical Department of the Leicester College of Technology. Burnham Scale plus £50. The Registrar.—A Junior Assistant in the Experimental Stores Department of the Experimental Station, Porton. £258. The Commandant.

Obituary

MR. FREDERICK BICKELL GUTHRIE, formerly chief chemist to the New South Wales Department of Agriculture. He was a distinguished Australian scientist and held a number of important posts.

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ORGANIC.—The analysis of mixtures of isomeric toluidines. H. H. Evers and N. Strafford. *J.S.C.I.*, March 25, pp. 114–117T.

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PHYSICAL.—The temperature effects of mixing liquids. W. M. Madgin and H. V. A. Briscoe. *J.S.C.I.*, March 25, pp. 107–109T.

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APPARATUS.—An apparatus for circulating gases. H. N. Stephens. *Ind. Eng. Chem.*, March, p. 425.

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COLLOIDS.—The imbibition of gelatin dried as a gel and as a sol. R. A. Gortner and W. F. Hoffman. *J. Phys. Chem.*, March, pp. 464–466.

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ORGANIC.—The catalytic preparation of unsaturated hydrocarbons from carbon monoxide and hydrogen. C. R. Hoover, M. J. Dorcas, W. D. Langley, and H. G. Mickelson. *J. Amer. Chem. Soc.*, March, pp. 796–805.

Some reactions of lead tetraethyl. O. H. Browne and E. E. Reid. *J. Amer. Chem. Soc.*, March, pp. 830–838.

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The application of the Phase Rule to the calculation of liquid and vapour compositions in binary systems. Deviations from Raoult's Law for hydrocarbon mixtures. G. Calingaert and L. B. Hitchcock. *J. Amer. Chem. Soc.*, March, pp. 750–765.

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ORGANIC.—The reduction of quinoline-2:4-dicarboxylic acid. T. Nozoe. *Proc. Imp. Acad. Jap.*, December, 1926, pp. 541–543.

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The action of dibenzoyl peroxide on some chlorides and oxychlorides of phosphorus and antimony. A. F. A. Reynhart. *Rec. Trav. Chim. Pays-Bas*, February 15, pp. 62–67.

The action of dibenzoyl peroxide on benzene at low temperatures in the presence of iron and aluminium chlorides. *Rec. Trav. Chim. Pays-Bas*, February 15, pp. 54–61.

The action of organo-magnesium derivatives on *N*-tetraethylphthalamides. N. Maxim. *Compt. Rend.*, March 14, pp. 689–691.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

266,225. Natural Aluminium Hydroxides, Process for the Treatment and Digestion of. F. Kleinmann, 38, Friedrichstrasse, Uerdingen-on-Rhine, and Buttner-werke, Akt.-Ges., Uerdingen-on-Rhine, Germany. Application date, August 25, 1925.

Natural aluminium compounds such as bauxite are wet-ground and then digested with caustic alkali, or the alkali may be added during grinding. The mixture is then heated to boiling point and then evaporated until the temperature reaches 135° C. The aluminium hydrate is then precipitated with carbon dioxide. A yield of about 90 per cent. can be obtained. This process is much shorter than that in which the bauxite is dried and then roasted at a high temperature before treatment with alkali. Further, no titanium oxide and less silica go into solution. The drying may be effected in a long tube ball mill.

266,397. Sulphuric Acid, Method of Manufacturing. J. V. Skoglund, 706, Riverside Drive, Manhattan, New York. Application date, September 23, 1925.

In the chamber process for the manufacture of sulphuric acid, the gases coming from the chambers are passed through a preliminary Gay-Lussac tower of small size in which most of the nitrogen trioxide is absorbed in sulphuric acid. The remaining gases containing a large proportion of nitrogen peroxide and a small proportion of trioxide are passed to a tower and treated with water or weak acid. The residual gases are then passed to the main Gay-Lussac tower and absorbed by the sulphuric acid. Space must be provided for the production of nitric oxide either before the final Gay-Lussac tower, or within it. The sulphuric acid flowing through the final tower may also flow through the preliminary tower, and the water or weak acid in the scrubbing tower may be recirculated until it contains 30 per cent. weak nitric acid. The nitric acid is run into the nitrous vitriol and passes to the Glover tower. The towers may be replaced by spraying apparatus.

266,404. Vat Dyestuffs. L. Cassella and Co., G.m.b.H., Frankfort-on-Main, Germany, A. J. Ransford, 16, Mowbray Road, London, S.E.19, and A. Carpmael, 24, Southampton Buildings, London, W.C.2. Application date, October 14, 1925. Addition to 189,367.

Specification No. 189,367 (see The Chemical Age, Vol. VII, p. 942) describes the production of vat dyestuffs by heating 2-methyl-anthraquinone or an omega halogenised derivative with sulphur and an aromatic compound containing the paradiamine group

$$\rangle N-Aryl-N\langle \quad (p) \quad (p)$$

In this invention, the aromatic paradiamine compound is replaced by a primary diamino compound containing the two amino groups in other than the para position. Examples are given of the production of dyestuffs from 2-methyl-anthraquinone, 1 : 5-naphthylene-diamine and sulphur; 2-methyl-anthraquinone, metaphenylene-diamine and sulphur; 2-methyl-anthraquinone, diamino-benzanthrone and sulphur.

266,405. Organic Compounds containing Oxygen, Production of. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, October 19, 1925.

In the catalytic production of methanol or other oxygenated organic compounds from carbon oxides and hydrogen at high temperatures and pressures, gas mixtures are employed containing a high percentage of gases not required for the reaction. Part of the circulating gases rich in inert gas is continuously removed and replaced by fresh gas mixture in such proportion as to maintain a constant composition of the circulating gas. By using inert gases, the excess heat developed is absorbed and the yield obtained is equal to or higher than that obtained with pure gases. It is possible to use gases which are available in large quantities at a low cost, and an example is given of the use of a gas containing 5·5 per cent. carbon dioxide, 27·8 per cent. carbon monoxide, 15·6 per cent. hydrogen, 2·6 per cent. methane, and 48·5 per cent. nitrogen. The gas is mixed with steam and passed over heated iron oxide to decompose so much of the carbon monoxide that the gas contains carbon monoxide and hydrogen in the proportion of 1 : 2. The carbon dioxide is absorbed by water, and the gas then circulated over a contact mass at a pressure of 1,000 atmospheres and a temperature of 400° C. When the proportion of reacting constituents has decreased from 45·9 per cent. to 36 per cent., this proportion is maintained by continuous withdrawal of circulating gas and addition of fresh gas.

266,410. Methanol and other Oxygenated Organic Compounds, Manufacture of. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, October 23, 1925.

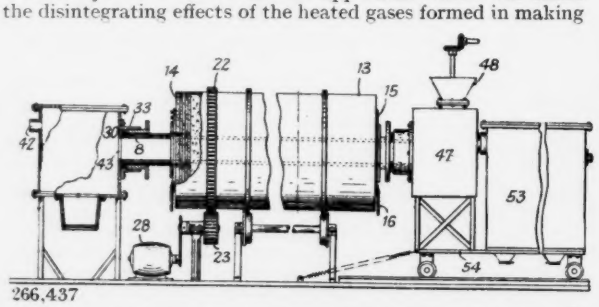
Methanol and other organic compounds are usually produced synthetically from mixtures of carbon monoxide and dioxide with hydrogen, obtained from coke. In this invention a gas mixture obtained by distilling bituminous coal or by a cracking process can be employed. The hydrocarbons in these gases are partly oxidised with a restricted quantity of oxygen to convert part or all of them into carbon monoxide and hydrogen. The sulphur compounds are removed and the mixture then passes over a catalyst to produce methanol. Examples are given of the treatment of coke oven gas, oil gas, etc., in this manner.

266,418. Rubber, Manufacture of. P. Schidrowitz, 57, Chancery Lane, London, W.C.2, and Vultex, Ltd., 24, Beresford Street, St. Helier, Jersey. Application date, October 28, 1925. Addition to 193,451. (See The Chemical Age, Vol. VIII, p. 348.)

Rubber latex is concentrated, *e.g.*, by direct evaporation, with addition of ammonia or like anti-coagulating agent or of a protective colloid. The concentrated latex containing 60–70 per cent. of rubber can be directly vulcanised without substantial coagulation to obtain concentrated aqueous solutions or suspensions of vulcanised uncoagulated rubber. Such products are suitable in the manufacture of waterproofed fabrics, etc. The conditions which prevent coagulation comprise a non acid mixing or the presence of basic reagents or protective colloids such as ammonium oleate, soaps, alkali lysalbuminate, and casein. The vulcanisation may be effected at high or low temperatures, and accelerators may be used together with fillers, dyes, etc. Several examples are given.

266,437. Anhydrous Metallic Chlorides, Apparatus for Making. F. T. Wohlers, 131, Washington Place, Hasbrouck Heights, Bergen County, N.J., U.S.A. Application date, November 23, 1925.

The object is to construct an apparatus which will stand the disintegrating effects of the heated gases formed in making



266,437

metallic anhydrous chlorides. The reaction chamber 8 is a tube of fused silica such as "Vitreosil," which is surrounded by a resistance coil and a fire-proofing cement. The tube projects into a cylindrical iron tube 13, the space between the two tubes being filled with fire-proof bricks. Both ends

of the tube 13 are closed by asbestos plates 14, and finally by metal plates 15, to which the ends of the resistance coil are connected. Fixed brushes 16 make contact with the metal plates as they rotate. The tube 13 carries a circular rack 22 engaging with a pinion 23 driven by a motor 28. The tube 8 is connected to a chlorine chamber 30 by means of a stuffing box 33, and is provided with an inlet opening 42 and outlet 43. The opposite end of the tube 8 is also secured by a stuffing box joint to the chamber 47 mounted on a car 54. The chamber 47 is connected to a condenser 53. The solid material is fed into a funnel 48, and passes into the feed chamber 47, and thence into the rotating tube 8, which is slightly inclined towards the chlorine chamber 30. The reaction tube 8 is maintained at a uniform temperature by the surrounding heating coil and the supply of chlorine is regulated as required.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: —238,904 (F. Pollak), relating to condensation products of urea or its derivatives and formaldehyde, see Vol. XIII, p. 477; 243,353 (H. G. Flodin and E. G. T. Gustafsson), relating to production of iron and alloys directly from iron oxide, see Vol. XIV, p. 15 (Metallurgical Section); 246,840 (I. G. Farbenindustrie Akt.-Ges.), relating to compounds of the anthraquinone series, see Vol. XIV, p. 361; 247,956 (Bakelite Ges.), relating to purification of phenol-aldehyde condensation products, see Vol. XIV, p. 444; 250,947 (G. Schicht Akt.-Ges.), relating to manufacture of highly viscous lubricating oils, see Vol. XV, p. 34.

International Specifications not yet Accepted

264,791. ACETALS AND ACETALDEHYDE. Consortium für Elektro-chemische Industrie Ges., 20, Zielstattstrasse, Munich, Germany. International Convention date, January 25, 1926. Addition to 257,622.

Specification 257,622 (See THE CHEMICAL AGE, Vol. XV, p. 456) describes the production of acetals by treating monohydric or polyhydric alcohols with acetylene in the presence of a mercury salt, the acetal being continuously removed. In this case, alcohol containing water is used. The proportion of acetal is increased by partly condensing the reaction vapours, and returning the condensate. The acetaldehyde formed may be fractionated out of the vapours or washed out with alcohol. Examples are given.

264,797. ORGANO-ARSENIC COMPOUNDS. Etablissements Poulenc Frères, 6, Rue Vieille du Temple, Paris. International Convention date, January 19, 1926.

A solution of 3-acetylamino-4-oxyphenylarsinic acid in dilute ammonia is treated with ammonia till neutral, and the resulting ammonium 3-acetylamino-4-oxyphenylarsinate precipitated with alcohol.

264,800, 265,146–7. DIGLYCERINE. Henkel et Cie. Ges., 67, Heyestrasse, Holthausen, Düsseldorf, Germany. International Convention dates, January 25, 26, 27, 1926.

264,800. Glycerine is heated while passing through a current of neutral gas such as carbon dioxide, nitrogen, or hydrogen, in the presence of a small quantity of sodium acetate. Diglycerine is formed, with little formation of polyglycerines.

265,146. Glycerine is heated with tantalum, thorium, or magnesium oxide in the presence of neutral gases such as carbon dioxide, nitrogen, or hydrogen, to obtain diglycerine.

265,147. This is an addition to 265,146. In addition to the accelerators previously mentioned, water glass, either solid or dissolved or as hydrated or crystallised sodium or potassium silicate, may be used.

264,804. SYNTHETIC DRUGS. F. Hoffmann-La Roche and Co. Akt.-Ges., 184, Grenzacherstrasse, Basle, Switzerland. International Convention date, January 20, 1926.

Dialkyl- or arylalkyl-barbituric acids are heated with dilute alkali solutions to obtain ureides of dialkyl- or arylalkyl-acetic acids. Examples are given.

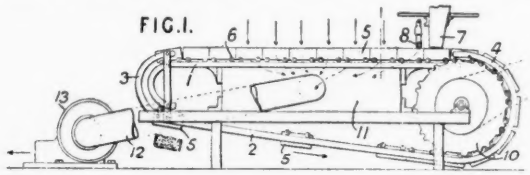
264,827. HYDROCARBONS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 19, 1926.

Ethylene and acetylene are produced by rapidly passing methane under pressure over alkaline earth metal salts, or salts, oxides, or hydroxides of magnesium or beryllium, or compounds of selenium, tellurium or thallium, or active silica or charcoal at a temperature of 700°–1,000° C. If the gases are quickly removed, acetylene is the main product at very high temperatures, and ethylene at lower temperatures.

264,823. SODIUM ALUMINATE. Aluminum Co. of America, 2,400, Oliver Building, Pittsburg, U.S.A. (Assignees of J. B. Barnitt, 631, Maryland Avenue, Pittsburg, U.S.A.) International Convention date, January 21, 1926.

A uniform layer of fuel, aluminous material, and sodium carbonate is ignited at the surface, and the fuel caused to burn rapidly through the mass, which is preferably moistened. The mass is contained in receptacles 5 having rollers 6 which engage in guides 1, 4. The mixture is supplied by a hopper 7 to form a layer about 5 inches thick, which is ignited by burners 8. A down-draught is created by a suction box 11

FIG. 1.



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connected to a fan 13, and the speed of the receptacles 5, which are driven by a sprocket 10, is adjusted so that combustion of the fuel is completed while over the suction box 11. Sodium aluminate having a high content of water-soluble alumina is obtained.

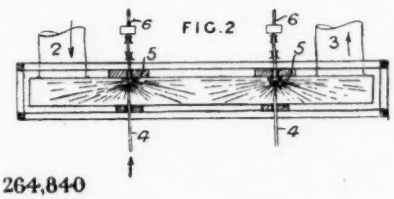
264,830. KETOLS AND KETONES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 19, 1926.

An aldehyde and a ketone are condensed in the presence of an alkali compound of a 1 : 3 ketol. The latter is obtained by treating the ketone to be condensed with anhydrous solid alkali, and the solution in excess of ketone may then be treated with aldehyde. In an example, acetone is treated with powdered caustic potash at 5° C. to obtain the potassium compound of diacetone alcohol. The cooled solution is treated with acetaldehyde, and carbon dioxide is passed through to precipitate potassium carbonate, and the acetone excess is distilled off. Diacetone alcohol and hydracetylacetone are obtained.

264,840. SULPHURIC ACID. Montecatini Soc. Generale per l'Industria Mineraria ed Agricola, 35, Foro Bonaparte, Milan, Italy, and R. Klien, 13, Via Finanze, Rome. International Convention date, Jan. 19, 1926.

The sulphur dioxide gases and the nitrous sulphuric acid are mixed intensively in a small narrow reaction chamber. In the

FIG. 2.



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apparatus shown in horizontal section, the acid liquor is projected from pipes 4 against discs 5 rotating at high speed. The gases enter at 2 and owing to the restricted space a thorough mixing is obtained in passing to the outlet 3, together with entrained sulphuric acid.

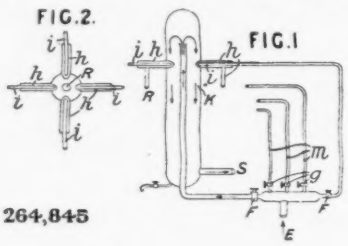
264,860. DISPERSIONS AND EMULSIONS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 20, 1926.

Solutions or dispersions of substances normally insoluble in water are obtained by treating a solution or suspension in an organic solvent with water in the presence of aliphatic or aromatic sulphonic acids or salts, e.g., the alkyl, aryl, aralkyl, or hydroaryl derivatives of aromatic sulphonic acids, or of aromatic halogen-, oxy-, nitro-, carboxy-, or amino-sulphonic

acids, the alkyl, etc., radicals being situated in the nucleus and/or in the substituent radical or serving to link up several aromatic radicals. A large number of examples are given.

264,845. CRACKING HYDROCARBONS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 20, 1926.

Saturated hydrocarbons such as methane are converted into unsaturated hydrocarbons such as acetylene by passing them



through a narrow zone of high temperature. The gas to be treated is supplied through a pipe E and branches *m* to burners *i* arranged radially in a reaction tube K so as to produce a disc of flame. Part of the gas is delivered through a central pipe R and passes through the disc of flame, the hot gases then preheating the incoming gases. Alternatively, the high temperature zone may be produced by flameless combustion in platinised asbestos or other refractory material.

264,879. ANTHRAQUINONE DERIVATIVES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 25, 1926.

Sodium 1 : 4-diaminoanthraquinone-2 : 6-disulphonate is diazotised with sodium nitrite and dilute sulphuric acid, and the mono-diazo compound salted out. The monosulphonic acid yields an insoluble monodiazo compound.

LATEST NOTIFICATIONS

207,885. Manufacture of sulphuric acid. Petersen, H. March 20, 1926.

207,901. Manufacture of phenol-formaldehyde condensation products. Kunstharzfabrik Dr. F. Pollak Ges. March 17, 1926.

267,906. By-product coke ovens and processes of operating same. Semet-Solvay Co. March 22, 1926.

267,907. Process of producing active silicic acid. Bachmann, W. March 18, 1926.

267,912. Electrolytic apparatus more particularly adapted for the electrolysing of alkaline chlorides. Dupire, A. P. H. March 16, 1926.

267,924. Treatment of fibres and other industrial materials. I. G. Farbenindustrie Akt.-Ges. March 18, 1926.

267,925. Production of aldehydes. I. G. Farbenindustrie Akt.-Ges. March 19, 1926.

267,940. Manufacture of condensation products from aromatic hydrocarbons or derivatives thereof. I. G. Farbenindustrie Akt.-Ges. March 16, 1926.

267,952. Manufacture of products for dyeing or printing textile fibres and other materials. Durand and Huguenin Soc. Anon. March 17, 1926.

267,954. Manufacture of unsaturated aldehydes. Rupe, H. March 22, 1926.

267,958. Cracking hydrocarbon oils or their distillates by distillation under pressure. Stransky, Dr. S., and Hansgirg, Dr. F. March 18, 1926.

267,959. Refining low-boiling distillates of hydrocarbon oils. Stansky, Dr. S., and Hansgirg, Dr. F. March 18, 1926.

267,968. Disinfectants. Du Pont De Nemours and Co., E. I. March 18, 1926.

267,985. Process of dyeing mixed textile goods. I. G. Farbenindustrie Akt.-Ges. March 22, 1926.

267,986. Processes for dyeing animal fibres. Durand and Huguenin Akt.-Ges. March 22, 1926.

Specifications Accepted with Date of Application

243,339. Conversion of heavy or complex hydrocarbon oils into lighter oils, Process for. J. F. Donnelly. November 21, 1924.

244,134. Catalytic combustion of mixtures consisting of ammonia and oxygen, Apparatus for. I. W. Cederberg. December 8, 1925.

245,092. Base exchange substances, Production of. Cochrane Corporation. December 23, 1924.

252,694. Condensation products containing sulphur, Manufacture of. I.G. Farbenindustrie Akt.-Ges. May 28, 1925. Addition to 218,316.

252,019. Liquid fuels, Manufacture and production of. I.G. Farbenindustrie Akt.-Ges. May 8, 1925. Addition to 226,731.

254,287. Obtaining light oils by washing gases, Process for. I.G. Farbenindustrie Akt.-Ges. June 25, 1925.

254,340 and 254,743. Tetrahalogen-4 : 4¹-dimethyl-thioindigos and hexa-substituted thioindigos, Manufacture of. I.G. Farbenindustrie Akt.-Ges. June 27, and July 2, 1925. 254,743 addition to 254,340.

267,080. Chromium plating. Metals Protection Corporation. March 5, 1926.

201,732. Eliminating water from liquid sulphurous acid gas, Process for. Allegemeine Ges. für Chemische Industrie. November 19, 1925.

267,177. Vat dyestuffs and intermediate products. O.Y. Imray. (*Soc. of Chemical Industry in Basle.*) October 12, 1925.

267,191. Oxide of lead, Manufacture of. H. Waring and Associated Lead Manufacturers, Ltd. November 12, 1925.

267,246. Sulphur, Recovery of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) December 17, 1925.

267,253. Heat treatment of iron or steel. Automatic and Electric Furnaces, Ltd., and L. W. Wild. December 30, 1925.

267,359. Benzol and like aromatic hydrocarbons, Method of manufacturing. I. W. Henry. May 28, 1926.

267,364. Conversion of mineral oils and the like of high boiling point into aliphatic hydrocarbons of low boiling point, Process for. F. W. Todt and P. Sumpf. June 2, 1926.

267,386. Lower boiling distillates from higher boiling petroleum hydrocarbons, Production of. A. J. H. Haddan. (*Gulf Refining Co.*) July 24, 1926.

267,396. Acid-proof cementing compositions, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 25, 1926. Addition to 19,032/26.

267,433. Minerals, slags or the like, Treatment of. W. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) November 10, 1926.

267,457. Quinoline derivatives, Manufacture of. W. Carpmael. (*Farbenfabriken vorm. F. Bayer and Co.*) September 7, 1925.

265,124. Sodium peroxide, Manufacture of. Roessler and Hasslacher Chemical Co., January 29, 1926.

267,366. Oxycarboxy-*p*-diamino-diaryl-sulphones and oxycarboxy-*p*-amino-oxydiaryl-sulphones, Manufacture of. W. Carpmael. I.G. Farbenindustrie Akt.-Ges. June 7, 1926.

Applications for Patents

American Coalinoil Corporation and Fairweather, H. G. C. Fuel. 7,905. March 22.

Arnot, R. Manufacture of adhesives. 8,375. March 26.

Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Obtaining perfumes. 7,784 and 7,785. March 21.

Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Process for absorbing ammonia, etc., from gases. 7,786. March 21.

Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Manufacture of elastic preparations of pharmaceutical products. 8,299. March 25.

Coates, W. M., and Riley and Sons, Ltd., J. Manufacture and treatment of colloidal materials. 7,975. March 23.

Durand and Huguenin Akt.-Ges. Dyeing animal fibres. 7,939. March 22. (Germany, March 22, 1926.)

Grené, P. Converting heavy hydrocarbons into light hydrocarbons. 7,750. March 21.

Holzverkohlungs-Industrie Akt.-Ges. Concentrating raw pyroligneous acid. 8,300. March 25. (Germany, May 25, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of fuel gases. 7,920. March 22.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of vat dyestuffs. 8,138. March 24.

I. G. Farbenindustrie Akt.-Ges. Process of dyeing mixed textile goods. 7,938. March 22. (Germany, March 22, 1926.)

I. G. Farbenindustrie Akt.-Ges. Substituted aromatic sulphonic acids. 8,146. March 24. (Germany, April 7, 1926.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of alkylated, etc., arylsulphonic acids. 8,285. March 25. (Germany, March 27, 1926.)

I. G. Farbenindustrie Akt.-Ges. Drying agent for gases. 8,303. March 25. (Germany, June 7, 1926.)

I. G. Farbenindustrie Akt.-Ges. Refining iron. 8,354. March 26. (Germany, April 1, 1926.)

Klein, P. Production of rubber articles from aqueous dispersions of vegetable resins. 8,399. March 26.

May and Baker, Ltd., and Newbery, G. Manufacture of oxyacetic acid derivatives of arylarsenic compounds. 8,017. March 23.

Northrup, V. W. Conversion of heavy petroleum oils into lighter oils. 7,742. March 21.

Soc. of Chemical Industry in Basle. Manufacture of artificial threads. 8,147. March 24. (Switzerland, March 24, 1926.)

Soc. Chimique des Usines du Rhône. Apparatus for manufacture of cellulose acetate. 8,170. March 24. (France, May 10, 1926.)

Stancliffe, C. W. Apparatus for distilling and cracking oils. 8,121. March 24.

Sutcliffe, E. R. Apparatus for distillation of coal, etc. 8,386. March 26.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 per ton for home market, 1-cwt. drums included.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 7d. per lb. Crude 60's, 1s. 8d. to 1s. 9½d. per gall.

ACID CRESYLIC 99/100.—2s. 4½d. per gall. Steady. 97/99.—2s. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 2s. 2d. per gall. Dark, 1s. 9d. to 2s. per gall.

ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.

BENZOLE.—Crude 65's, 1s. 2½d. to 1s. 3½d. per gall., ex works in tank wagons. Standard Motor, 1s. 9d. to 2s. 4d. per gall., ex works in tank wagons. Pure, 2s. 1d. to 2s. 5d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 11½d. to 2s. 2½d. per gall. Firm. Pure, 2s. 3d. to 2s. 5½d. per gall.

XYLOL.—2s. 1d. to 2s. 6d. per gall. Pure, 3s. per gall.

CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6¾d. to 9d.; middle oil, 7½d. to 8d. per gall. Heavy, 8½d. to 9d. per gall. Salty, 7d. per gall. less 1½%.

NAPHTHA.—Crude, 9d. to 9½d. per gall. according to quality. Solvent 90/160, 1s. 8d. to 2s. 1d. per gall. Solvent 95/160, 1s. 8d. to 1s. 9d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £8 per ton. Whizzed or hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. per ton, according to districts.

PITCH.—Medium soft, 77s. 6d. to 95s. per ton, according to district; nominal.

PYRIDINE.—90/140, 9s. 6d. to 13s. per gall. Nominal. 90/180, 5s. per gall. Heavy, 5s. to 8s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—1s. 6d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—7d. per lb. naked at works.

ANILINE SALTS.—7d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—4d. per lb. Fair inquiry.

m-CRESOL 98/100%.—2s. 8¾d. per lb. Only limited inquiry.

p-CRESOL 32/34° C.—2s. 8¾d. per lb. Only limited inquiry.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb. d/d.

R. SALT.—2s. 2d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 5s. per ton. Grey, £15 10s. per ton, Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£7 to £10 per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 1s. per gall. 16° Tw.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—4s. per gall., 60% O.P. Solvent, 4s. 3d. per gall., 40% O.P.

WOOD TAR.—£4 to £5 10s. per ton and upwards, according to grade.

BROWN SUGAR OF LEAD.—£41 to £42 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5½d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4½d. to 2s. 6d. per lb. Firm and brisk.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. per oz.; 500 oz. lots, 1s. per oz.

ACID, BORIC B.P.—Crystal, £41 per ton; powder, £45 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 4½d. to 1s. 5d. per lb., less 5%. Firmer.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P.—1s. 4d. to 1s. 5½d. per lb. Technical.—11¾d. to 1s. per lb. Both in good demand.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 2d. per lb., less 5%. Firm market.

AMIDOL.—9s. per lb., d/d.

ACETANILIDE.—1s. 6d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—8s 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: lump, 1s. per lb.; powder, 1s. 3d. per lb.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—6s. 6d. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 3d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 3d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 6d. to 12s. 6d. per lb., all above bismuth salts, according to quantity.

BISMUTH NITRATE.—6s. 9d. per lb.

BISMUTH OXIDE.—13s. 9d. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. per lb.

BISMUTH SUBGALLATE.—9s. 9d. per lb.

BORAX B.P.—Crystal, £24 per ton; powder, £25 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 11d. to 2s. per lb.; sodium, 2s. 2d. to 2s. 3d. per lb.; ammonium, 2s. 4d. to 2s. 5d. per lb., all spot.

CALCIUM LACTATE.—1s. 2½d. to 1s. 3½d.

CHLORAL HYDRATE.—3s. 2d. to 3s. 5d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHER METH.—1s. 1d. to 1s. 11½d. per lb., according to sp. gr. and quantity. Ether purif. (Aether B.P., 1914), 2s. 3d. to 2s. 4d., according to quantity.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—5s. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 5d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—22s. per cwt., 112 lb. lots.

MAGNESIUM CARBONATE.—Light Commercial, £33 per ton net.

MAGNESIUM OXIDE.—Light commercial, £67 10s. per ton, less 2½%; Heavy Commercial, £22 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 9d. per lb. net; Synthetic, 10s. 6d. to 12s. 6d. per lb., according to quantity; 10s. 6d. for 1 cwt. lots and upwards; Liquid (95%), 12s. per lb.; Detached Cryst., 14s. 6d. per lb.

MERCURIALS.—Up to 1 cwt. lots, Red Oxide, 7s. to 7s. 1d. per lb., levig., 6s. 6d. to 6s. 7d. per lb.; Corrosive Sublimate, Lump, 5s. 3d. to 5s. 4d. per lb., Powder, 4s. 8d. to 4s. 9d. per lb.; White Precipitate, Lump, 5s. 5d. to 5s. 6d. per lb., Powder, 5s. 6d. to 5s. 7d. per lb., Extra Fine, 5s. 7d. to 5s. 8d. per lb.; Calomel, 5s. 10d. to 5s. 11d. per lb.; Yellow Oxide, 6s. 4d. to 6s. 5d. per lb.; Persulph., B.P.C., 5s. 7d. to 5s. 8d. per lb.; Sulph. nig., 5s. 4d. to 5s. 5d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 7d. per lb.

METHYL SULPHONAL.—11s. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—3s. per lb.

PHENAZONE.—4s. 6d. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb. for 1 cwt. lots.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. for 1000 oz. lots in 100 oz. tins.

RESORCIN.—4s. per lb., spot.

SACCHARIN.—55s. per lb. Very limited inquiry.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. to 2s. 1d. per lb. for 1 cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—10s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—Pulv., 77s. 6d. to 82s. 6d. per cwt., according to quantity; Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—7s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 1d. per lb.

THYMOL.—Puriss., 11s. 3d. to 12s. 6d. per lb., according to quantity. Firmer. Natural, 14s. 9d. per lb. Cheaper.

Perfumery Chemicals

ACETOPHENONE.—7s. 3d. per lb.

AUBEPINE (EX ANETHOL), 10s. 3d. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. 6d. per lb.

COUMARIN.—10s. 9d. per lb.

CITRONELLOL.—14s. 6d. per lb.

CITRAL.—9s. 6d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—9s. 6d. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. 6d. to 10s. 6d. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Bois de Rose, 16s. per lb. Ex Shui Oil, 12s. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 18s. per lb. Ex Shui Oil, 14s. 6d. per lb.

METHYL ANTHRANILATE.—9s. per lb.

METHYL BENZOATE.—4s. 6d. per lb.

MUSK KETONE.—36s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—11s. per lb.

RHODINOL.—28s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—17s. to 18s. 6d. per lb. Good demand.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. 1d. per lb.

BERGAMOT OIL.—30s. per lb.

BOURBON GERANIUM OIL.—11s. 3d. per lb.

CAMPHOR OIL.—63s. 6d. per cwt.

CANANGA OIL, JAVA.—22s. 6d. per lb.

CINNAMON OIL LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—8s. 9d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 3d. per lb. Ceylon, pure, 1s. 10d. per lb.

CLOVE OIL.—6s. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 20s. 9d. per lb.

LEMON OIL.—11s. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—10s. 6d. per lb.

OTTO OF ROSE OIL.—Anatolian, 30s. per oz. Bulgarian, 70s. per oz.

PALMA ROSA OIL.—9s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 19s. 3d. per lb. Japanese, 8s. 6d. per lb. Firm.

PETITGRAIN OIL.—8s. 3d. per lb.

SANDALWOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, March 31, 1927.

THERE is little change to report in the position of the market; business is still rather on the moderate side without any important changes in prices. Stocks continue light. Export inquiry is not so good.

General Chemicals

ACETONE is firm at £57 10s. per ton.

ACID ACETIC.—No change in price, and the demand is quite good for home trade, but for export is disappointing.

ACID CITRIC.—Continues firm, at round about 1s. 4d. per lb., with a fair business passing.

ACID FORMIC.—Demand is more active, and price is unchanged at £47 10s. to £48 per ton.

ACID LACTIC.—Continues firm, and the price remains unchanged at £43 per ton, for 50% by weight demand is good.

ACID OXALIC.—The improved demand continues at the new prices of from £27 to £30 per ton, ex wharf.

ACID TARTARIC is in fair request, and price very firm at 1s. 2d. per lb.

ALUMINA SULPHATE.—Quiet, and inclined to be easy at £6 2s. 6d. per ton, for 17/18%, iron free.

AMMONIUM CHLORIDE is in poor demand, and price only nominal at £19 10s. per ton.

COPPER SULPHATE is firm, and there is a fair business passing at £25 per ton.

CREAM OF TARTAR is an extremely firm spot and supplies are short; for near position the present price is round about £94 to £95 per ton.

EPSOM SALTS.—Unchanged at about £5 10s. per ton, demand fair.

FORMALDEHYDE.—Has been more active, and the price is inclined to be firmer at £41 10s. per ton.

LEAD ACETATE is very firm, and quite a good business is passing at £44 10s. per ton for white, and £43 per ton for brown.

METHYL ACETONE.—Has been more active, and the average price for high grade material is £58 per ton.

METHYL ALCOHOL.—Unchanged.

POTASSIUM CHLORATE is very firm, and in good request at 3½d. per lb.

POTASSIUM PERMANGANATE is in small demand, and price continues nominally unchanged at 7½d. per lb., for B.P. material.

POTASSIUM PRUSSIATE is in good request, and price is steady at 7½d. per lb.

SODIUM ACETATE is firm at £19 10s. per ton.

SODIUM BICHROMATE.—Unchanged.

SODIUM HYPOSULPHITE.—No change is reported in the British makers' figures, but a fair amount of business is passing.

SODIUM NITRITE is if anything inclined to be somewhat steadier, but the market is still at £19 10s. per ton, with a poor demand.

SODIUM PRUSSIATE.—Firm at 4¼d. to 4½d. per lb.

SODIUM SULPHIDE.—British makers have reduced their prices all round, and the price ranges from £11 15s. to £12 15s. per ton, according to quantity for solid concentrated, with £1 per ton extra for broken, the price for Crystals being reduced to £7 17s. 6d. to £8 17s. 6d. per ton, according to quantity.

ZINC SULPHATE.—A fair demand is reported, and price is unchanged at £14 per ton.

Coal Tar Products

The market for coal tar products is fairly steady, although the prices of one or two products have been affected by the fall in the price of petrol.

90's BENZOL is now quoted at about 1s. 7½d. per gallon, on rails.

PURE BENZOL is worth from 2s. 1d. to 2s. 3d. per gallon, on rails.

CREOSOTE OIL is steady, and is quoted at about 7¼d. to 7½d. per gallon, on rails in the North, and at about 8¼d. to 8¾d. per gallon, in London.

CRESYLIC ACID is firm, the pale quality 97/99%, being quoted at about 2s. per gallon, on rails, while the dark quality 95/97% is quoted at about the same price.

SOLVENT NAPHTHA is unchanged, and is worth about 1s. 4d. per gallon, on rails.

HEAVY NAPHTHA is steady at 1s. 2d. to 1s. 3d. per gallon, on rails.

NAPHTHALENES remain firm, the 76/78 quality being quoted at £8 5s. to £8 15s. per ton, while the 74/76 quality is worth £7 10s. to £8 per ton.

PITCH is dull, and prices have a downward tendency. To-day's value is 90s. to 100s. f.o.b. U.K. ports.

Latest Oil Prices

LONDON.—March 30.—LINSEED OIL steady but quiet. Spot, £31 5s., ex mill; March, £30 5s.; April and May-August, £30 7s. 6d.; September-December, £31 2s. 6d. RAPE OIL slow. Crude, extracted, £45; technical, refined, naked, £47, ex wharf. COTTON OIL quiet. Refined common edible, £40 10s.; Egyptian crude, £34 10s.; deodorised, £42 10s. TURPENTINE quiet and 6d. per cwt. lower. American, spot, 46s. 6d.; May-June, £47s.; and July-December, 48s. 6d.

HULL.—March 30.—LINSEED OIL.—Spot to April, £30 10s.; May-August, £30 15s.; September-December, £31. COTTON OIL.—Naked, Bombay crude, £32 10s.; Egyptian crude, £33 10s.; edible refined, £37 10s.; technical, £36 10s.; deodorised, £39 10s. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £37. GROUNDNUT OIL.—Crushed/extracted, £44 10s.; deodorised, £48 10s. SOYA OIL.—Extracted and crushed, £34; deodorised, £37 10s. RAPE OIL.—Crude/extracted, £44; refined, £46 per ton, net cash terms, ex mill. CASTOR OIL and COD OIL.—Unchanged.

Nitrogen Products

Export.—During the past week the position has remained unchanged. British producers continue offering on the basis of £10 17s. 6d. f.o.b. U.K. ports in single bags. As most consuming countries have sufficient stocks for early requirements, there is little business being done. Prices are being maintained for forward positions but buyers are holding off in anticipation of the fall in prices which will be taking place during May.

Home.—Reports from various parts of the country indicate that the home demand is rather quiet for March. The opinion is current in agricultural circles that the fertilising season is a late one and heavy deliveries are expected in April. British producers report that sales are still in advance of last year, but that optimistic expectations in certain quarters will not be realised. Prices remain unchanged at £12 6s. per ton for neutral quality, basis 20·6% nitrogen, and £11 16s. per ton for ordinary quality, basis 20% nitrogen.

Nitrate of Soda.—Nitrate continues selling at scale prices, but sales are small even in the United States. Retail material has appeared on the market at low prices and this accentuates the tendency to hold off. The artificially high price at which nitrate is being sold cannot have any other effect than a large diminution in consumption.

Calcium Cyanamide

LARGELY owing to the lateness of the present season, the demand for this fertiliser continues to be well maintained. As announced in our previous issue, the price for April is £9 16s. per ton delivered in 4-ton lots, carriage paid to any railway station in Great Britain.

Dyers' and Colourists' Annual Dinner

DR. HERBERT LEVINSTEIN, the new President of the Society of Dyers and Colourists, was prevented by indisposition from presiding at the annual dinner of the Society in Bradford on Friday, March 25, and his place was taken by Mr. H. Sutcliffe Smith, a past president and the present chairman of the Colour Users' Association. Sir Hugh Bell was the principal guest, and others present included Mr. Septimus Marshall (Prime Warden of the Worshipful Company of Dyers), Mr. W. Graham (Board of Trade), Mr. Ernest Hickson (ex-president of the Society), Mr. H. Jennings (chairman of the West Riding Section), and Professor F. M. Rowe. The Chairman in responding to the toast of the Society remarked that young research workers had done a great amount of work for the dyeing industry, and he believed that they would put the country on a plane that would enable it to compete successfully with all other countries in the world. Responding to the toast of the guests, Mr. Septimus Marshall said the Worshipful Company of Dyers had contributed about two million pounds to the cause of technical education, and he hoped that the appeal of the Society of Dyers and Colourists for funds to carry out their investigations regarding fastness to light would receive from the company something more than sympathy.

ARRANGEMENTS HAVE BEEN MADE to resume the discussions between British and German industrialists which were commenced at Romsey last October. The British industrialists have now been invited by Dr. Duisberg, of the I.G., president of the Federation of German Industries, to be his guests at Leverkusen, near Cologne, from April 29 to May 2. Sir Max Muspratt is among those who have been invited to take part in the resumed conference.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, March 30, 1927.

THE heavy chemical market continues to show moderate activity, and although quantities moving are not large, the volume of business placed is quite satisfactory. Prices both for home and continental products are steady.

Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quantity and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton; powder, £36 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Rather easier at about 6½d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—In moderate demand, and price unchanged at about 1s. 4d. per lb., less 5% ex store, spot delivery.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Unchanged at about 3d. per lb., c.i.f. U.K. ports.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Again rather firmer at 1s. 2¼d. per lb., less 5%, ex store. Offered for early shipment at 1s. 1¼d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material on offer at about £6 per ton, ex store. Quoted £5 8s. 6d. per ton, c.i.f. U.K. ports, prompt shipment from the Continent.

ALUM POTASH.—Lump quality quoted £8 per ton, c.i.f. U.K. ports. Crystal powder, 5s. per ton less. Lump on spot, £9 per ton. Crystal powder, £8 10s. per ton, ex store.

AMMONIA ANHYDROUS.—On offer at 9¾d. per lb., ex store. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2¼d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of English manufacture unchanged at about £23 to £24 per ton, ex station. Continental on offer at about £20 10s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £18 5s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Spot material on offer at about £19 10s. per ton, ex store. Quoted £18 10s. per ton, ex wharf, prompt shipment from mines.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £8 per ton, c.i.f. U.K. ports. Spot material on offer at £9 10s. per ton, ex store.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers, £8 per ton, ex station, minimum 4 ton lots. Spot material, 10s. per ton extra. Continental now quoted £7 10s. per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental quoted £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Spot material of English manufacture on offer at about £24 per ton, ex store. Continental quoted £23 per ton, c.i.f. U.K. ports.

FORMALDEHYDE, 40%.—Quoted £38 10s. per ton, c.i.f. U.K. ports. Spot material available at about £40 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental now quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material quoted £33 10s. per ton, ex store.

LEAD, WHITE.—Quoted £34 per ton, ex store.

LEAD ACETATE.—White crystals quoted £42 15s. per ton, c.i.f. U.K. ports; brown, about £40 5s. per ton, c.i.f. U.K. ports; white crystals on spot quoted £44 5s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

MAGNESIUM CHLORIDE.—Quoted £6 6s. 6d. per ton, c.i.f. U.K. ports.

POTASH CAUSTIC, 88/92%.—Solid quality unchanged at £27 5s. per ton, c.i.f. U.K. ports, minimum 15 ton lots. Smaller quantities, 15s. per ton extra. Liquid, 50° Be, £14 10s. per ton, c.i.f. U.K. ports, minimum 15 ton lots.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb. delivered.

POTASSIUM CARBONATE.—96/98%, spot material on offer at about £27 per ton, ex store. Quoted £25 10s. per ton, ex wharf, early shipment; 90/94% quality, quoted £22 10s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE.—Powdered quality on offer from the Continent at about £23 17s. 6d. per ton, c.i.f. U.K. ports; crystals, £2 per ton extra.

POTASSIUM NITRATE.—Spot material on offer at £22 10s. per ton, ex store. Offered for prompt shipment from the Continent at about £21 per ton, c.i.f. U.K. ports.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6¾d. per lb., ex store, spot delivery. On offer for early shipment at 6½d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—In good demand, and price unchanged at about 7½d. per lb., ex store, spot delivery. Offered from the Continent at 7¼d. per lb., c.i.f. U.K. ports.

SODA CAUSTIC.—Powder, 98/99%, £19 7s. 6d. per ton; 76/77% £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4 ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—English material quoted £22 10s. per ton, ex store. Continental on offer at about £19 per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¼d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more; alkali, 59%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture, quoted £9 2s. 6d. per ton, ex station, minimum 4 ton lots. Continental quality offered at £8 per ton, ex wharf, prompt shipment, packed in bags. Casks 10s. per ton extra. Pea crystals, photographic quality, of British manufacture quoted £14 10s. per ton, ex station.

SODIUM NITRATE.—Ordinary quality quoted £13 per ton, ex store. Refined quality, 5s. per ton extra.

SODIUM NITRITE, 100%.—Spot material now quoted £20 5s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—Offered for prompt shipment from the Continent at 4¼d. per lb., ex wharf. Spot material on offer at 4¾d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—60/65% solid, £12 10s. per ton; broken, £13 10s. per ton; flake, £14 10s. per ton; crystals, 31/34%, £8 10s. per ton, and £9 per ton, according to quality, delivered buyers' works, minimum 4 ton lots on contract. Price for spot, 5s. per ton extra for solid, 2s. 6d. per ton extra for crystals; 60/62% solid, quality offered from the Continent at about £9 7s. 6d. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £11 10s. per ton; rock, £11 10s. per ton; floristella, £11 per ton; ground American, £9 15s. per ton, ex store, prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material on offer at about £10 10s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, March 31, 1927.

There is no indication of any further improvement on the Manchester market in the demand for chemical products, and hope of revival of anything like a substantial scale is rendered more distant by the fact that textile manufacturers in Lancashire have slipped into one of their numerous troughs of depression. This, however, may only be short-lived. Meanwhile, inquiry is on moderate lines although a fair trade continues to be reported in the chief varieties of heavy products.

Heavy Chemicals

In the case of bichromate of soda a quiet business is being put through at steady prices, about 3½d. per lb. still being asked. Bleaching powder is also fully maintained at £8 per ton and a moderate volume of inquiry is being met with. Hyposulphite of soda is selling in moderate quantities, with photographic crystals offering at from £15 to £15 5s. per ton and commercial quality at £9 15s. Values of caustic soda remain quite firm at from £14 10s. to £16 10s. per ton, according to quality, and a fairly active home and export demand for this material continues to be reported. Nitrite of soda is in quiet request and values are steady, about £19 5s. per ton being quoted here this week. At £3 10s. per ton saltcake has not altered much but sales of this product are still relatively slow. Current values of prussiate of soda are round 4¼d. per lb., and a moderate inquiry has been experienced during the past week. Alkali is moving off in fair quantities and prices are well held at £6 15s. per ton. There is only a quiet trade passing in the case of phosphate of soda, but quotations keep fairly steady at round £12 12s. 6d. per ton. A moderate amount of business is going through in bicarbonate of soda, values of which are maintained at about £10 10s. per ton. Chlorate of soda seems to be fairly steady again at 3d. to 3⅛d. per lb., but there has only been a quiet demand for this since last report. Sulphide of sodium, also, continues to move off in limited quantities, with 60-65 per cent. concentrated solid offering at £11 per ton and commercial material at about £8 7s. 6d.

Values of caustic potash and carbonate of potash are easier at £28 10s. and £25 12s. 6d. per ton, respectively, although there is still a fair amount of business reported in these two products. In permanganate of potash, however, there is only a comparatively quiet trade being done and prices are easy, although perhaps not actually changed on the week at 5⅞d. per lb. for B.P. quality and 4⅞d. for commercial. Yellow prussiate of potash remains fairly steady at 7¼d. per lb., although the demand for this is on the slow side. Chlorate of potash is also in limited request at about 3¼d. per lb. For bichromate of potash current demand is on a fair scale, with supplies offering at 4⅛d. to 4¼d. per lb.

There is only a moderate business passing in arsenic and prices have a somewhat easier tendency, from £16 15s. to £17 per ton at the mines for white powdered Cornish makes being about the range. Sulphate of copper keeps steady and continues to meet with a fairly good demand at round £25 per ton. Nitrate of lead keeps rather slow and the tendency of prices is weak at about £30 per ton. The demand for the acetates of lead is on a limited scale, but there has been little important modification of values, white offering at £43 to £44 and brown material at about £41 per ton. Acetate of lime is steady and in moderate request at £15 15s. for grey and £9 for brown.

Acids and Tar Products

Although there is not much activity in the case of citric acid values have further strengthened and offers are being made at from 1s. 4½d. to 1s. 4⅝d. per lb. Tartaric acid has also firmed up considerably, and round 1s. 2½d. per lb. is being quoted here to-day. Oxalic acid is slow and easy at 3d. to 3⅛d. per lb. Acetic acid, however, continues to meet with a fair inquiry at steady prices, with glacial at about £67 per ton and 80 per cent. commercial at £37.

Among the coal-tar products there is some inquiry for creosote oil and prices are fairly steady at 7¼d. to 7½d. per gallon. Pitch keeps slow and values are still easy at about £4 5s. per ton, f.o.b. There is only a very quiet demand for solvent naphtha and at about 1s. 5½d. per gallon quotations are weak. Carbolic acid is attracting some attention and values are steady at 7d. per lb. for crystals and 1s. 11d. per gallon for crude material.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Gee & Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to April 23, 1927.

"Agarine."

476,193. Class 1. Chemical preparations for eliminating boiler scale. The Liverpool Borax Co., Ltd., Old Swan Works, Borax Street, Liverpool; manufacturers. December 24, 1926.

477,213. Alkalies used in manufactures, photography or philosophical research, muriate of ammonia, sodium hypochlorite, sodium chlorate, sodium hyposulphite, ammonium chloride, ammonium sulphate, ammonium carbonate, ammonium bicarbonate, ammonium nitrate, ammonium sulphocyanide, calcium chloride, calcium carbonate, calcium hypochlorite, calcium sulphite, calcium hyposulphite, calcium bisulphite, calcium sulphate and dyes, all the said goods being chemical substances and not for export to and sale in China, Hongkong, Mongolia, Thibet, Siberia, all Chinese territory leased to foreign powers, French Indo-China, and Hainan. Class 1. Brunner Mond and Co., Ltd., Winnington, Northwich, Cheshire; alkali manufacturers. January 28, 1927. (To be Associated. Sect. 24.)

Tariff Changes

Antigua.—The Dangerous Drugs Ordinance, 1926 (No. 13 of 1926), provides for the control of the import, export, manufacture, sale and use of raw and prepared opium, Indian hemp, cocaine, morphine, and other similar drugs and preparations thereof.

Palestine.—Sugar of milk will be regarded as falling under the terms "drugs, raw and prepared," and will be allowed duty free entry when imported in reasonable quantities for pharmaceutical purposes.

Egypt.—A Ministerial Decree, No. 4 of 1926, dated January 30, and effective as from the date of its publication in the Egyptian *Journal Officiel* of February 7, provides that salts of sulphate of soda and of magnesia, of tartarated antimony (*tartre stibié*) and of carbon tetrachloride imported from abroad for medical use may not be cleared through the customs or through the post until a permit has been obtained from the Minister of the Interior (Administration of Public Hygiene).

Oil and Colour Chemists' Dinner

The annual dinner of the Oil and Colour Chemists Association was held on Wednesday at the Hotel Cecil, London. The toast of the president (Mr. C. A. Klein) was proposed by Dr. E. F. Armstrong, Mr. Klein responding. The other toasts were the guests, proposed by Dr. J. J. Fox, and responded to by Sir Alexander Gibb, president of the Institution of Chemical Engineers, and Mr. F. H. Carr, president of the Society of Chemical Industry; and the Research Association of the British Paint, Colour and Varnish Manufacturers, proposed by Sir Frank Heath, secretary of the Department of Scientific and Industrial Research, and responded to by Mr. S. K. Thornley, chairman of the council of the Research Association. Among those present were Professors H. E. Armstrong and T. M. Lowry, and Dr. L. A. Jordan, director of research to the Research Association. A note on the proceedings appears elsewhere in this issue.

Company News

BURT, BOULTON AND HAYWOOD, LTD.—An interim dividend of 5 per cent. is announced on the ordinary shares.

BENZOL AND BY-PRODUCTS CO.—The directors have decided to pay one year's arrears of preference dividend of 6 per cent., less tax, on April 1.

PAN DE AZUCAR NITRATE CO.—An interim dividend of 5 per cent., less tax, on account of the profits for the year ending June 30. A similar interim was announced a year ago.

ANGLO-PERSIAN OIL CO.—The directors have declared an interim dividend of 5 per cent., less income tax, on the ordinary shares on account of the year ending March 31, payable on April 30.

SWEDISH MATCH CO.—The profit for 1926 amounted to Swedish crowns 32,326,461, against 28,476,774 for the previous year. A final dividend of 10 per cent. is proposed, making 15 per cent. for the year, against 12 per cent. for 1925.

RIO TINTO CO.—A final dividend for the year 1926 on the ordinary shares of 30s. per share, less tax, is announced, making a total ordinary dividend for the year of 50 per cent. The board have also decided to add £500,000 to the reserve fund, carrying forward about £150,000.

NIGER CO.—The trading profit for the year ended June 30 last amounted to £647,474, as against £681,520 for the preceding year. After providing for debenture interest, depreciation discount and expenses of debenture issues, and placing £5,000 to insurance reserve, there remains £201,659, which it is proposed to carry forward.

LINOLEUM MANUFACTURING CO.—The net profit for 1926 was £231,908, and a balance was brought in of £81,959. It is proposed to pay 3s. 6d. per share, being, with the amount paid last September, a total of 25 per cent. for the year; bonus to workpeople, £3,000; to general reserve, £50,000; carrying forward £110,867. A similar dividend was paid for 1925.

AGUAS BLANCAS NITRATE CO.—It is announced that no interest on the debenture stock of the Aguas Blancas Nitrate Company due May 1 will be paid. The debenture holders are also being asked to consent to the postponement of the amortisation from May 1 next to May 1, 1930, or to the year immediately following the first completed year of manufacturing ended December 31, whichever is the earlier. In a circular the directors say that it is impossible to say when manufacturing operations will be resumed.

BRITISH OIL AND CAKE MILLS, LTD.—The balance at credit of profit and loss account for the year ended December 31, 1926, is £218,036, and adding thereto the amount brought forward from 1925, together with a transfer from preferential dividend reserve fund, the sum available is £365,406. The directors recommend the payment of preference share dividend, which will require £40,870, and of a preferred ordinary share dividend of 10 per cent. (less income-tax), absorbing £290,902, carrying forward £33,633. For 1925 the net profit was £488,422, and for 1924 £315,136. The annual meeting will be held at Winchester House, London, on April 12, at 12.30 p.m.

BELL'S UNITED ASBESTOS CO., LTD.—The report of the directors for the year ended December 31 last, states that the result of the year's operations is a net profit of £51,303, to which has to be added £34,962 brought forward, making a total of £86,265. The interim dividend paid on the 6 per cent. preference shares in August, 1926, and the 2½ per cent. dividend paid in October on the ordinary shares, absorbs £9,138, leaving for appropriation £77,127. After deducting from this the sum of £1,800 for the balance dividend at the rate of 6 per cent. per annum due on the cumulative preference shares to December 31, paid on February 1 last, there remains £75,327. The directors recommend the payment on April 11 of a dividend on the ordinary shares of 2s. per share, which with the interim dividend paid in October, makes a total distribution of 12½ per cent. for the year; that £2,000 be placed to the staff pensions account; and that £43,973 be carried forward.

VEREINIGTE GLANZSTOFF (ARTSILK) CO.—The total receipts for the past year were 14,340,000 m., or 1,680,000 m. more than in 1925. Expenses and taxation increased by 1,160,000 m. to 4,460,000 m.; 2,890,000 m. were applied to various settlements, and 147,238 m. were carried forward. The report states that the situation improved during the second half of the year owing to the German Price Convention and the international agreements, especially with the Italian firms. Concerning foreign participations, it is stated that the Glanzstoff-Courtauld undertaking will begin its production in the autumn, while the American Bemberg Corporation has already been working for several months. The Aceta Co. has already begun its activities. The patent for the "airsilk" process acquired since last June by the Glanzstoff Co. has been handed over to the German Celta Co. The enlargement of the works has made further progress, the money invested for that purpose being, however, less than in the previous year.

BRITISH DYESTUFFS CORPORATION, LTD.—The accounts for the nine months to December 31 last show a profit of £82,934 and a balance brought forward of £78,005. An amount of £45,000 has been set aside for depreciation, and it is proposed to pay a dividend at the rate of 2½ per cent. per annum, less tax, leaving to be carried forward £44,306. The report states that trading results were adversely affected by the recent coal strike, which involved not only a substantial increase in manufacturing costs, but led to a reduced demand for the company's products. Shareholders representing more than 98 per cent. of the total issued capital of the company have agreed to accept shares in Imperial Chemical Industries, Limited, in exchange for their holdings in British Dyestuffs. A notice issued with the report states that shareholders who exchanged their shares for shares in Imperial Chemical Industries, Limited, retain their dividend rights up to December 31, 1926, and will consequently participate in the dividend to be paid on April 6.

AMERICAN CELLULOSE AND CHEMICAL MANUFACTURING CO.—The net income from the operations of the company amounted to $1,458,517 for 1926. After providing for depreciation, taxes, bad debts, interest on bonds, reserve for premium on bond redemption, there has been carried forward to surplus a profit available for dividends of $908,912. The report calls attention to the reserves on the balance sheet, and particularly to the amount reserved for depreciation and amortisation, which is over $1,850,000, representing approximately 22 per cent. of the cost of buildings and plant. Current assets exceed current liabilities by more than $2,700,000, and expenditure on new buildings and plant, added to the factory during 1926, amounted to $661,741. The net income from operations is now running at the rate of nearly $3,000,000 per annum. The yarn factory commenced operating at a small capacity on January 1, 1925, and at the present time the factory is working at full capacity and the sales considerably exceed the production. In 1926 the company paid the dividends, totalling 8¾ per cent., on the seven per cent. cumulative first participating preferred stock; the company has also declared a dividend of 1¾ per cent. on this preferred stock.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LIQUID ASPHALT.—The Tanzim Department of the Egyptian Ministry of Public Works invites tenders to be presented by noon on May 14, for the supply of 1,275 tons of liquid asphalt (bitumen). (Reference B.X. 3,375.)

LEAD AND ANTIMONY.—The Czechoslovakian Direction of Railroads is inviting tenders, to be presented by April 14, for the supply and delivery of 20,000 kg. soft Pribram or other lead and 4,000 kg. pure antimony. (Reference A.X. 4,459.)

Italian Chemical Combine

NEGOTIATIONS are being actively carried on between the Società Italiana del Gas, the Società Italiana Prodotti Esplodenti and the Società Materie Coloranti Bonelli, Italy's principal chemical producing companies, with the object of arriving at co-ordination of manufacture through inter-locking capital arrangements. The scheme has the full approval of the Government, and it is expected that the Treasury will contribute a certain measure of financial support in order to make the venture successful, and so render Italy independent of foreign markets.

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The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

CAMPBELL BROS., Mossfield Dyeworks, Mossfield Road, Farnworth. (C.C., 2/4/27.) £19 11s. 5d. February 16.

JONES, Benjamin, 176, Park Road, Liverpool, paint and varnish manufacturer. (C.C., 2/4/27.) £21 1s. 10d. February 8.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an—followed by the date of the Summary, but such total may have been reduced.]*

CROCKATT (JOHN), LTD., Leeds, dyers and cleaners. (M., 2/4/27.) Registered March 15 (by order on terms), £700 mortgage dated February 9, 1926, to Friendly Society; charged on land and premises in Harrogate Road, Chapel Allerton. *£11,463. February 9, 1927.

DAVIS (J. W.) AND SON (HULL), LTD., varnish manufacturers. (M., 2/4/27.) Registered March 18, mortgage to Bank; charged on land and shop in Newland Avenue, Hull. *£3,000. January 13, 1927.

JOHNSON (J. H.) (SALFORD), LTD., dyers and cleaners. (M., 2/4/27.) Registered March 18, £1,500 charge, to Mrs. E. Johnson, 34, Bromley Road, Lytham St. Annes; charged on Flixton Power Laundry, Flixton, with engine, etc. *Nil. December 12, 1925.

LEWIS AND BURROWS, LTD., London, E.C., chemists. (M., 2/4/27.) Registered March 18, £3,000 and further sums not exceeding in all £15,000 charge, to Assurance Co.; charged on building agreement relating to 22, Great Portland Street and 55 and 57, Margaret Street, W. *Nil. December 24, 1926.

TAYLORS (CASH CHEMISTS) TRUST, LTD., London, W.C. (M., 2/4/27.) Registered March 19, charge, etc., to bankers; charged on certain shares, etc.

London Gazette, &c.

Company Winding Up Voluntarily

BROWN AND CO. (DYES), LTD. (C.W.U.V., 2/4/27.) By special resolution, passed March 1, confirmed March 18. A. M. Smith, of Thomas Smith and Sons, 135, Buchanan Street, Glasgow, appointed liquidator.

Receivership

SABULITE (GREAT BRITAIN), LTD. (R., 2/4/27.) F. F. Fuller, F.C.I.S., of 639/643, Salisbury House, E.C., was appointed receiver on March 18, 1927, under powers contained in debenture dated October 25, 1926.

New Company Registered

WOOL BYE-PRODUCTS, LTD., 2a, Tyrrell Street, Bradford. Registered March 18. Nom. capital, £2,000 in £1 shares. To adopt an agreement with W. Swan for the acquisition of the chemical process, plant, machinery, fittings and fixtures comprised therein; and to carry on the business of manufacturers of neutral oils, fatty acids and lanoline grease; chemists, druggists, oil and colour men, etc. Directors: J. T. Windle, F. Gill, and J. L. Windle.

British Oxygen Co. Sue Metal Welders

In the Bow County Court, on Friday, before Judge Snagge, the British Oxygen Co., Ltd., of Angel Road, Leyton, sought to enforce the payment of a judgment debt and costs of £53 13s. 9d., from Herbert Foulkes, trading as the Castknit Brazing Co., of 192, High Street, Stratford, metal welders and braziers. Judgment was obtained in the King's Bench Division of the High Court. The defendant appeared, and offered to pay £5 a month. He admitted that he employed six men, and the rent of his works was £100 a year. He said he could not pay more than his offer at the present moment, because he had a good many outstanding accounts. He admitted that what had been supplied had been used in his business, and that he had paid nothing since November of last year, but in that connection he pointed out that he had dealt with the plaintiffs for 12 years, and therefore there was no question about them getting their money. Judge Snagge made an order for payment at the rate of £6 a month.

Manufacturing Chemist's Affairs

The public examination of James Hanby Markham, trading as Watson, Walker, and Quickfall, at Sheepscar Chemical Works, Leeds, manufacturing chemist and drysalter, and also as A. J. Barbour and Co., as horticultural chemists, was held recently at the County Court House, Albion Place, Leeds. The debtor's deficiency was put down at £1,765. It appeared that in January, 1908, debtor and another purchased a certain company for £6,250. Debtor had previously been employed by the company, but it had been voluntarily wound up. Subsequently a bank overdraft was obtained to meet the purchase of the premises, and in 1913 the partnership was mutually dissolved, the debtor taking over the business and liabilities and assets. Trade was affected last year by the coal strike. Debtor said he had continued to trade knowing he was in difficulties, and had had to resort to moneylenders. Debtor had supplied a statement to the bank, but certain figures were overestimated. The examination was adjourned for the debtor to supply further details of his accounts.

Paint and Enamel Company's Liquidation

Unsecured trade creditors for £5,587, and net assets expected to produce £3,100, were disclosed by the statement of affairs submitted to the statutory meeting at Glasgow of the creditors in the voluntary winding-up of James A. Shepherd and Co., Ltd., of Forth Works, Glasgow. There were also cash creditors for £41,560, making a total deficiency of £44,047. The deficiency account showed trading losses of £33,484. The creditors present at the meeting, with the exception of two, confirmed the voluntary liquidation of the company, with Mr. W. Y. Chrystal, of 149, West George Street, Glasgow, as liquidator, and a committee of three creditors.

Benn Brothers' Other Journals

The Cabinet Maker.—Veneers and Veneering; The Retailer's Own Furnishing; New Books; Plywood and Furniture Making.

The Electrician.—Submarine Cable Progress, by E. S. Heurtley, M.I.E.E.; The Off-Peak Load, by Major G. D. Ozanne; Electricity at Retford; The National Register.

The Fruit Grower.—Survey of British Fruit Marketing; National Federation at Cardiff; Popularising the Potato.

Gardening Illustrated.—Shrubs for the Heath Garden; New Zealand Plants in a Scottish Garden; Alpines; Flowering Shrubs for the Rock Garden; Planting Border Carnations; Rational Pruning of Roses.

The Gas World.—Cartoon by Wallace Coop; Monthly by-Product Coking Supplement; The Present Position and Prospects of Gas Making.

The Hardware Trade Journal.—A "Clearing House" for Retailers' Payments; Hardware Business at Olympia; Motor Transport; The New Road Traffic Bill; Questions for Ironmongers' Assistants and their Answers.

The Timber Trades Journal.—The Right of Rejection; London Timber Staffs at Dinner; The Story of Veneer Production.